

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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SEE PAGE 120.



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Ad, Page 23

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120

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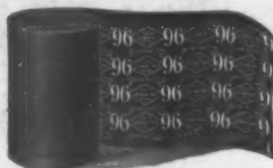
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THE IRON AGE

New York, Thursday, April 13, 1905.

A Record Production of Pig Iron.

Consumption at the Rate of 2,000,000 Tons in March.

The statistics of the production of pig iron in March mark another great record in the industrial development of the United States. As our figures given below in detail show, the output of the anthracite and coke furnaces amounted to 1,936,229 gross tons. To this must be added the production of charcoal iron, which we estimate at about 34,000 tons, thus carrying the total to 1,970,000 tons. Our reports on the stocks of the merchant furnaces indicate a decline in the stocks of over 30,000 tons, so that the conclusion is warranted that during March the apparent home consumption slightly exceeded 2,000,000 tons.

The statistics of production given in the following table are compiled from the official reports of all the furnaces in the country except three, whose aggregate output does not exceed 6000 tons:

	November. (30 days)	December. (31 days)	January. (31 days)	February. (28 days)	March. (31 days)
New York....	67,735	72,752	78,864	66,185	96,180
New Jersey...	28,308	21,464	23,841	20,487	29,292
Lehigh Valley	39,069	44,581	53,207	49,407	55,319
Schuylkill Val.	39,165	45,335	44,956	39,102	44,998
Lower Susquehanna and					
Lebanon Val.	41,526	39,999	37,318	34,161	39,590
Pittsburgh dis.	382,316	412,433	461,490	411,135	510,265
Shenango Val.	106,326	131,417	144,278	131,748	155,266
West. Penn...	82,787	92,478	98,765	96,551	97,569
Md., Va. and					
Kentucky...	51,499	56,165	72,601	62,170	78,337
Wheeling dis.	64,517	86,306	105,995	93,865	99,737
Mahoning Val.	129,774	149,397	161,462	145,590	154,140
Cent. and No.	98,610	103,522	121,902	97,638	123,438
Hocking Valley					
and Hanging					
Rock	24,295	27,336	27,730	22,094	30,539
Ill., Mich., Minn.,					
Wis., Mo. and					
Col	192,488	184,873	200,631	199,104	253,325
Alabama	115,780	114,670	117,575	99,624	127,316
Tennessee, No.					
Carolina and					
Georgia	22,401	23,339	31,232	28,482	40,918
Totals.....	1,486,605	1,616,007	1,781,847*	1,597,343*	1,936,229

* Two small furnaces estimated with a monthly production of 4700 tons.

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also separately monthly figures of the production of spiegel-eisen and ferromanganese, which is included in the total:

	Pig.—Total production.			Spiegeleisen and ferromanganese.	
	1903.	1904.	1905.	1904.	1905.
January.....		502,994	1,129,042	6,673	21,002
February....		756,260	1,027,937	12,961	22,431
March.....		913,412	1,232,255	23,128	21,280
April.....	966,850	974,006		29,145	
May.....	1,037,325	927,534		25,755	
June.....	1,021,839	788,822		24,950	
July.....	987,855	694,892		27,284	
August.....	993,564	747,570		19,280	
September...	956,363	936,494		20,723	
October.....	829,215	971,447		13,669	
November....	553,067	962,384		13,442	
December....	406,730	1,019,841		13,325	

Deducting from the total monthly production the out-

put of the steel companies we reach the following series of figures, which represent closely the make of the merchant furnaces. Taking into account the fluctuations in the stocks, we arrive at the apparent consumption from month to month:

	Production.	Stock.	Apparent consumption.
1904.			
January	420,657	— 21,615	442,272
February	452,151	— 45,722	497,873
March	538,005	— 71,364	609,369
April	587,081	— 13,688	600,769
May	609,461	+101,433	508,028
June	506,917	+ 75,104	431,813
July	515,927	+ 49,960	465,967
August	425,175	— 39,743	464,918
September	421,348	— 73,883	495,231
October	483,823	— 26,656	510,479
November	524,221	— 70,198	594,419
December	596,400	— 55,760	652,200
Totals.....	6,081,166	.....	6,273,338
1905.			
January	652,805	— 26,594	679,399
February	569,406	— 25,694	595,100
March	703,974	— 31,489	735,463

Capacity Operating.

During March the furnaces quite generally got into full swing, there being few complaints of hampering of operations. The following table shows the number and capacity of the furnaces in operation:

Location of furnaces.	Number of stacks.	April 1. Number in blast.	Capacity per week.	March 1. Number in blast.	Capacity per week.
New York:					
Buffalo district....	10	10	18,400	9	13,454
Other New York....	11	5	3,808	4	8,530
New Jersey.....	8	5	6,408	5	5,010
Spiegel	2	1	206	1	179
Pennsylvania:					
Lehigh Valley.....	27	18	12,313	17	10,650
Spiegel	2	2	300	2	450
Schuylkill Valley....	13	10	10,161	10	9,776
Low. Susquehanna....	10	5	6,194	5	6,549
Lebanon Valley....	11	7	5,250	2	1,912
Spiegel	1	1	527	0	0
Pittsburgh dist....	39	38	112,860	38	99,375
Spiegel	3	3	2,370	4	3,000
Shenango Valley....	21	19	35,750	17	32,937
West. Penn.....	24	15	20,106	17	23,140
Spiegel	1	0	0	0	0
Maryland	5	3	6,378	3	5,737
Wheeling dist....	13	11	22,521	11	23,466
Ohio:					
Mahoning Valley....	16	16	34,800	16	36,397
Central and North-					
ern and Michigan....	18	16	29,566	14	27,171
Hocking Valley....	2	0	0	0	0
Hanging Rock....	12	9	6,896	9	6,250
Illinois	21	18	41,061	17	36,910
Spiegel	1	1	1,407	1	1,434
Minnesota	1	1	1,117	1	978
Wisconsin	5	5	5,600	5	5,376
Missouri	1	1	760	1	997
Colorado	4	3	5,503	2	3,785
Spiegel	1	0	0	1	547
The South:					
Virginia	23	12	9,815	12	9,387
Kentucky	8	3	1,495	3	1,115
Alabama	44	24	28,749	24	26,000
Tennessee	16	14	8,284	13	7,145
Georgia	1	1	959	1	500
North Carolina....	1	0	0	0	0
Totals.....	376	277	439,564	265	403,157

During March there were blown in Franklin in New York, Macungie and the second Lock Ridge in the Lehigh Valley, Sharon and the third Shenango in the Shenango Valley, two Bird Coleman, two Colebrook, Robeson, one Lebanon and Sheridan in the Lebanon Valley, one South Chicago, one Bessemer of the Tennessee Company, Helen in Tennessee, and Allegheny in Virginia. There were blown out Pequest in New Jersey, Dunbar and Emporium in western Pennsylvania, Dora in Virginia and one Clifton in Alabama.

For a series of months the active anthracite and coke furnace capacity fluctuated as follows in gross tons:

	Coke capacity per week.		Coke capacity per week.
April 1, 1905.....	439,564	July 1.....	384,825
March 1.....	403,157	June 1.....	388,178
February 1.....	405,792	May 1.....	373,496
January 1.....	377,879	April 1.....	386,215
December 1, 1904.....	357,846	March 1.....	347,424
November 1.....	334,249	February 1.....	335,339
October 1.....	319,249	January 1, 1903.....	346,073
September 1.....	291,573	December 1, 1902.....	336,617
August 1.....	246,092	November 1.....	330,110
July 1.....	272,301	October 1.....	337,837
June 1.....	336,197	September 1.....	328,243
May 1.....	368,244	August 1.....	328,745
April 1.....	337,257	July 1.....	303,793
March 1.....	308,751	June 1.....	337,492
February 1.....	273,692	May 1.....	337,627
January 1, 1904.....	185,636	April 1.....	331,140
December 1, 1903.....	244,156	March 1.....	316,039
November 1.....	273,715	February 1.....	325,440
October 1.....	353,142	January 1, 1902.....	291,992
September 1.....	360,197	December 1, 1901.....	317,358
August 1.....	353,681		

Stocks.

Believing that a classification of the merchant stocks by general geographical divisions would aid in a correct appreciation of the situation, we have arranged them in three groups: The Eastern, which includes New York, New Jersey and the Schuylkill, Lehigh, Lower Susquehanna and Lebanon valleys; the Central Western and Northwestern, which includes western Pennsylvania, the Shenango and Mahoning valleys, the Hanging Rock region, central and Northern Ohio, and Michigan, Illinois, Wisconsin, Minnesota and Missouri, and the Southern, which includes Virginia, Kentucky, North Carolina, Georgia, Alabama and Tennessee. The stocks, of course, do not include the holdings of the steel companies:

Merchant Furnace Stocks.					
	Dec. 1.	Jan. 1.	Feb. 1.	March 1.	April 1.
East	88,142	84,967	85,054	79,996	68,912
Central and North-west	210,080	174,729	156,455	135,861	116,967
South	160,572	143,338	134,931	134,889	133,378
Totals.....	458,794	403,034	376,440	350,746	319,257

The principal decline in the stocks in the Central and Northwest has been in the Mahoning and Shenango valleys. There has been a slight accumulation in Illinois. In the South, Alabama and Tennessee have somewhat larger stocks on hand, but this has been more than offset by reductions in Virginia.

British Iron and Steel Statistics for 1904.

The statistics of the production of pig iron, Bessemer steel and open hearth steel in Great Britain in 1904, according to J. S. Jeans, secretary of the British Iron Trade Association, are as follows:

Pig Iron.

The total production of pig iron in 1904 amounted to 8,562,658 gross tons, against 8,811,204 tons in 1903, 8,517,693 tons in 1902 and 7,851,830 tons in 1901. The decrease in 1904 as compared with 1903 was 248,546 tons. Great Britain is a large importer of iron ore for the use of its blast furnaces. The imports of iron ore in 1904 amounted to 6,100,556 tons, against 6,314,162 tons in 1903, of which there were imported from Spain 4,648,335 tons in 1904 and 4,945,086 tons in 1903.

Bessemer Steel.

The total production of Bessemer steel ingots in 1904 amounted to 1,781,533 gross tons, against 1,910,018 tons in 1903, 1,825,779 tons in 1902 and 1,606,253 tons in 1901. The decrease in 1904 as compared with 1903 was 128,485 tons. Of the total production in 1904 there was produced by the acid process 1,129,224 tons and by the basic process 652,309 tons. Nearly one-half (304,817 tons) of the basic Bessemer production of 1904 was produced in the Cleveland district, in which district the production of acid Bessemer steel has been gradually declining in recent years, until in 1904 the production fell to 10,449 tons.

Open Hearth Steel.

The total production of open hearth steel ingots in 1904 amounted to 3,245,346 gross tons, against 3,124,083

tons in 1903, 3,083,288 tons in 1902 and 3,290,791 tons in 1901. The increased production in 1904 as compared with 1903 was 121,263 tons. Of the total production last year 662,064 tons were basic steel and 2,583,282 tons were acid steel. Since 1901 the production of basic open hearth steel in Great Britain has almost doubled. It will be observed, however, that the aggregate production of open hearth steel in Great Britain has made no progress in the last four years, the output in 1904 being a little less than in 1901.

Metal Trades Strike Imminent in Chicago.

Following the defeat of the brass workers and the machinists in their ten months' strike in Chicago, a flank movement has been executed by the officers of these unions by which they hope to force Chicago employers to reinstate the strikers and to abandon the open shop principle. This movement consists of the formation of a defense association, embracing five different unions, or, in other words, a working agreement which includes in it blacksmiths and helpers, brass crafts, machinists, molders and metal workers. This joint association or amalgamation is known as Metal Trades Council No. 9 of Chicago and vicinity. An ultimatum has been sent out by this association embodying the following demands: "Working time shall be nine hours for all shop work, work to be done between 7.30 a.m. and 5.30 p.m. Time and a half shall be paid for overtime and double time for work after midnight and on holidays. Disagreements shall be referred to the Advisory Board of the Metal Trades Council."

The ultimatum follows with a schedule of wages that must be paid, the schedule being an average of 10 per cent. higher than present wages. It is stipulated specifically, however, that blacksmiths shall receive a 5 per cent. increase beginning May 1, 1905. Brass workers' wages are graded from 25 cents an hour for monitor hands to 32½ cents for lathe hands and brass finishers. The minimum rate for die makers and tool builders is given at 37 cents and for machinists at 32 cents, with 50 cents an hour for outside erecting work. Molders' wages are set down at \$3 a day; core makers, \$2.75. Metal workers' wages are as follows: Machine and saw hands, 25 cents; helpers, 22½ cents; finishers, fitters and riveters, 30 cents; makers and mechanics handling blue prints, 33½ cents; bench hands, 22½ cents; coppersmiths, 38 8-9 cents; mechanics and outside work, 55 cents; outside helpers, 35 cents. Eight hours is to constitute a day's work for outside erection.

Employers have been given to understand that the cause of each of the five trades named has been made the cause of all, and that failure to agree to the terms of any one named will lead to a strike in all crafts in the shop.

Inasmuch as the Metal Trades Association and the Brass Workers' Association have both squarely defeated the machinists and the brass workers and have positively refused to have any further dealings with what is left of these unions, they cannot in justice to this position consider the demands made by Council No. 9. In other words, while they might agree to make concessions to the blacksmiths or the molders or the metal workers, they say that they will not under any circumstances reopen negotiations with the machinists or the brass crafts, and therefore unless the demand is withdrawn a general strike in the metal trades is inevitable. Employers are given until May 1 to accede to the demands named. This is looked upon by the Chicago employers as a last desperate effort on the part of defeated and discredited unions to induce more fortunate craftsmen to snatch their chestnuts from the fire, and the present attitude of the powerful associations of employers interested is that the demands are untenable and that there is little or no enforcing power back of them. Shops involved are now operating successfully on the open shop basis and union threats have no longer the terrors for them that they once had. As this is a "last ditch" stand, however, it is probable that a fight will be necessary before the final surrender of the coterie of labor leaders which has been waging the machinists' and brass workers' strikes for nearly a year.

The Bliss Automatic Planchet Cutting Press.

In *The Iron Age* for April 6 were illustrated two Bliss rolling mills for rolling the metal to the proper thickness preparatory to cutting it into blanks or planchets which are subsequently to be made into coins. After the metal has been rolled to the exact thickness it is passed through the planchet cutting press, as shown in the accompanying illustrations. Many improvements have been made in this machine, after much study given to the subject of coin blanking before it was designed. Experience has shown that a high speed automatic blanking press is best suited to the requirements. Accuracy and ease of die and punch adjustment, as well as easy access to the double feed rolls, are features for which

lengths of 3 to 6 inches without appreciable loss. When not in use it can be swung on a trunnion to the right of the press frame out of the way.

The slide which carries the cutting punches is very long in its guides, is strong and rigid and has an easily adjusted connection. A treadle lock is attached to the press when the roll feeds are attached, and with it the clutch can be locked down for continuous running.

The cutting capacity of the press when the automatic roll feed and scrap cutter are in use is two planchets of the dollar size at a stroke, three of the half dollar size, four of the quarter dollar size, four of the nickel size, four of the cent size and five of the dime size. The metal is usually rolled to a width suitable for a single dollar, so that dollars and half dollars are cut one at a

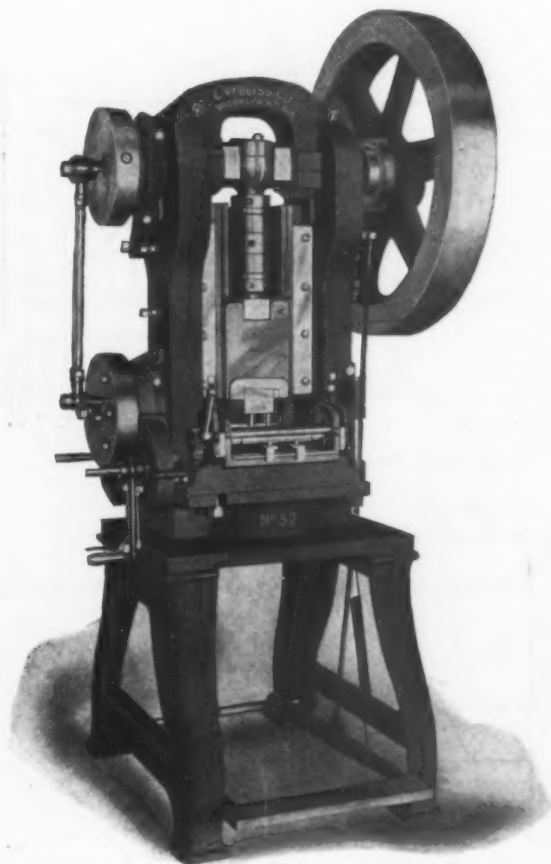


Fig. 1.—Front View.

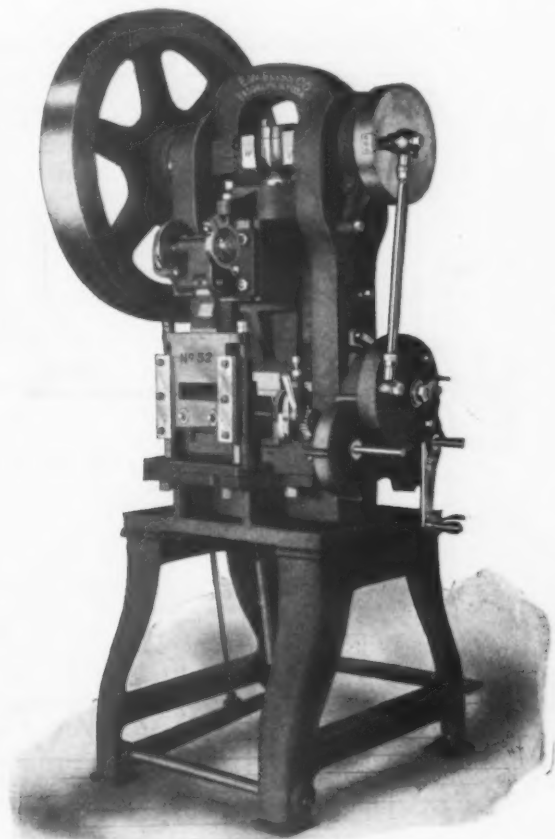


Fig. 2.—Rear View, Showing Scrap Cutter.

The Bliss Automatic Planchet Cutting Press.

provision has been made, and the metal can be handled without an extra operator.

Important features of the machine, as illustrated, are the adjustable swinging double roll feed and gauges, which are not disturbed when the feed rolls are swung out of the way, leaving a clear die space with no hindrance either in front or back of the die table. In presses where the feed rolls are dropped down in front or rear of the die table they are in the die setter's way, as they project far enough to be troublesome, and when ready to be placed back into position it usually requires two men to lift them into place and properly secure them. In this machine the die setter can do all this work alone, as he has no lifting to do, but simply swings the rolls into place. The indexing device is not disturbed when the rolls are swung back.

The dies, punches and strippers can be easily removed without disturbing any other part and others can be set in their place. This is done quite frequently, often several times in a day; therefore, time saving devices are necessary in such a machine.

Another new feature of this press is the scrap cutting device, which can be set so that the scrap metal can be chopped up fine at each stroke of the press or cut to

time, quarters are cut two at a time, and nickels, cents and dimes are cut three at a time, and as the speed of the press is 100 strokes per minute, from 100 to 300 blanks can be cut in that time. The feed rolls and scrap cutter in the press will take metal as wide as 5 inches. By removing the feed rolls and the scrap cutting attachment, and fitting single dies to this machine, it can be used, if necessary, as a coin proving press. It is built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y.

There is remarkable activity in building lines in Milwaukee this year. The building permits issued for the month of March show an increase of 250 per cent. over the same month a year ago, the increase being from \$354,480 to \$917,530. For one week alone there was a gain of almost \$170,000. During the last week of March 183 permits were issued, having an aggregate value of \$296,107. If only a part of the same ratio of increase is continued during the months to come, this year will be the greatest in building operations that Milwaukee has ever experienced. January and February showed increases of over \$100,000, as compared with the corresponding months in 1904.

The Backlund-Burman Traveling Charging Machine for Blast Furnaces.

In *The Iron Age* of December 29, 1904, there was illustrated and described an improved form of furnace charging apparatus, designed by Knute Backlund and Birger F. Burman, Sparrows Point, Md. This device was to be

one point above the bell or to vary the distribution according to temporary conditions of the furnace. In not a few cases in modern furnaces uneven stock distribution has caused rapid destruction of furnace linings and made it necessary to blow out and reline the furnace after a too short campaign. The same engineers have now endeavored to overcome these difficulties by a combination of old and new methods, employing the skip hoist as a

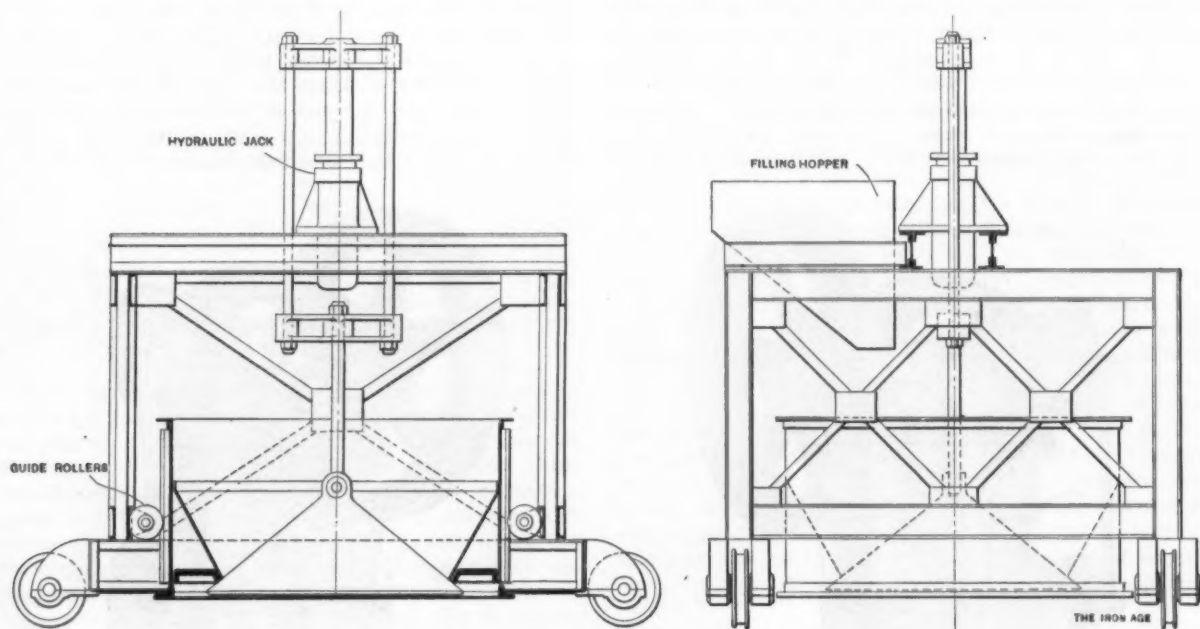


Fig. 1.—Traveling Charging Machine for Blast Furnaces.

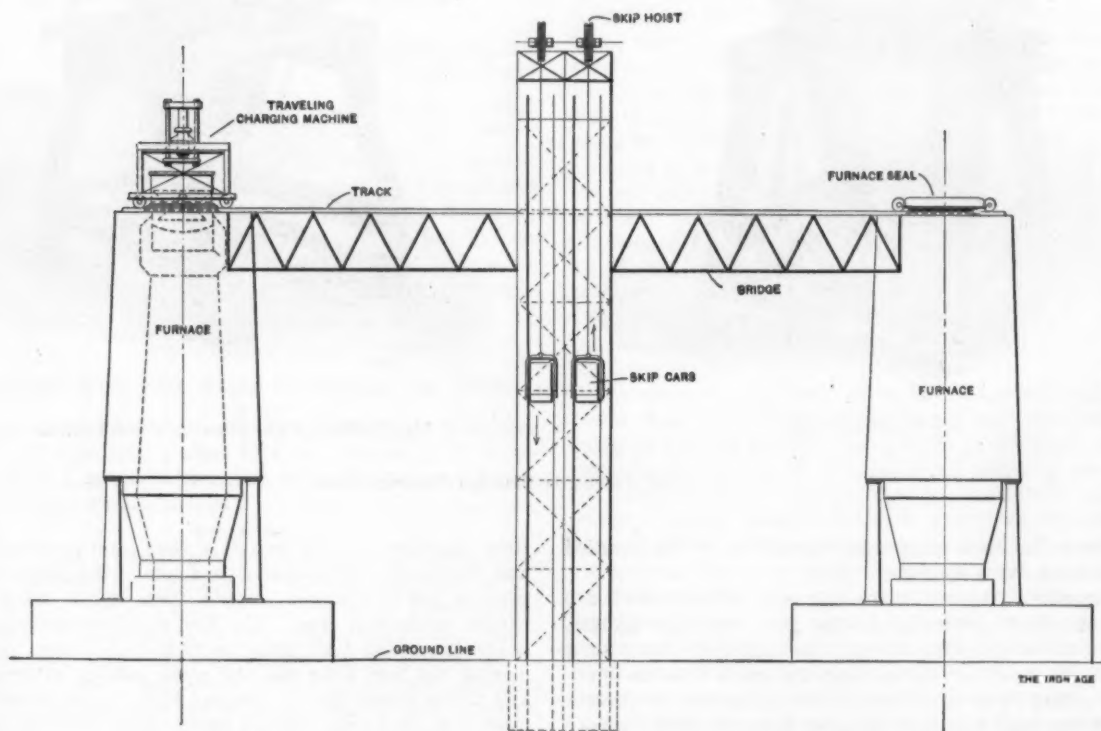


Fig. 2.—Arrangement for Serving Two Furnaces with One Traveling Charging Machine.

used together with a skip hoist, and the principal advantage was stated to be the facility for charging the bell or making repairs quickly, the whole apparatus being self contained and mounted on wheels and rails. In older furnace plants, however, where it is desired to reduce the cost of production by the introduction of automatic chargers, it is often found impossible to build a skip hoist for each furnace without making other extensive and costly alterations in the plant. Nor has the self dumping skip hoist, as a means for filling the furnace, given entire satisfaction. Experience has shown that it is almost impossible to distribute evenly a mixture of the stock from

means for raising the stock to the furnace top and hand labor or special mechanical means for distributing it on the bell.

The construction of a furnace charging apparatus mounted on wheels suggested having a furnace top which could travel to a place removed from the furnace where the stock could be hoisted, discharged and distributed on the bell ready for the furnace. The general arrangement of the apparatus as it was finally designed is shown in Fig. 1.* This device has been given the name travel-

* Patented in United States, Great Britain and Germany.

ing charging machine, and, briefly stated, consists of a substantial steel frame mounted on wheels, with a pair of girders on top of the frame work carrying a hydraulic cylinder in the center, the bell suspension rod being connected to the plunger of the cylinder, while a cylindrical

leased through a valve controlled by an electromagnet. Other equipment of the machine comprises a tank holding the hydraulic pressure medium, preferably a mixture of glycerine and water, and an electric motor driving the wheels. The lifting cylinder, pump and motors are in-

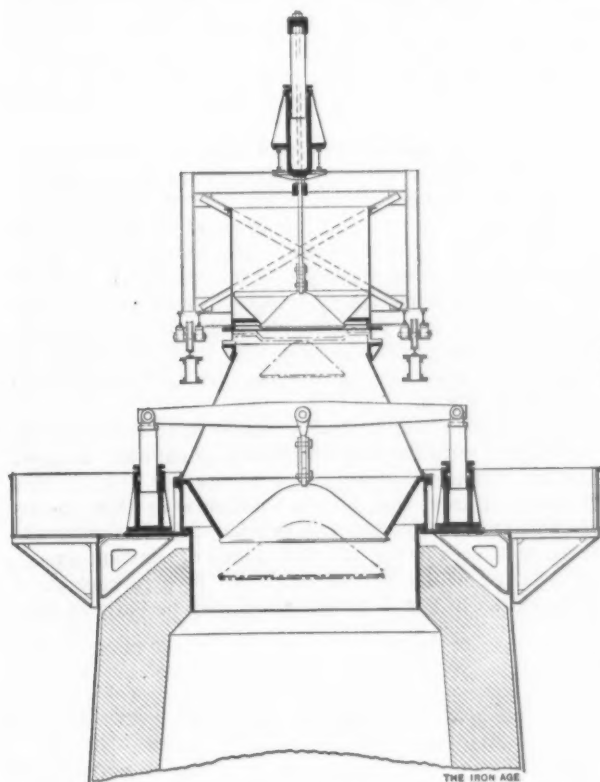


Fig. 3.—Section of Furnace Top with Charging Machine.

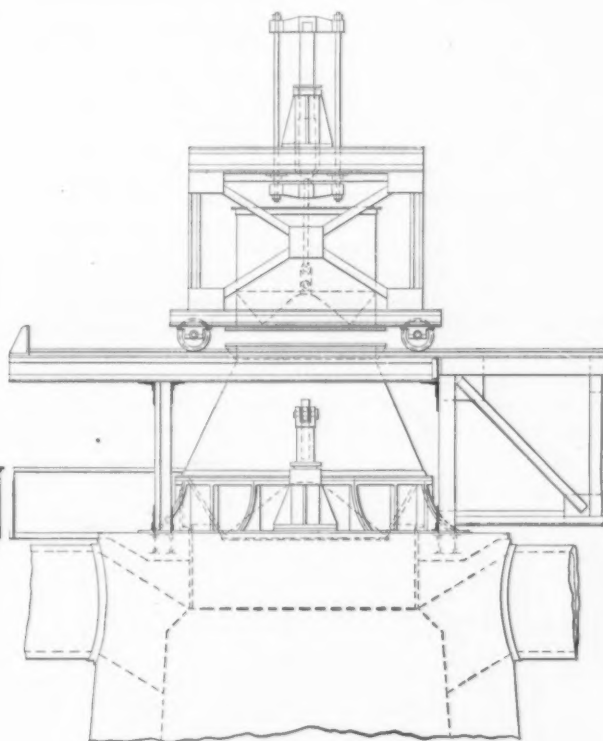


Fig. 4.—Elevation of Furnace Top with Charging Machine.

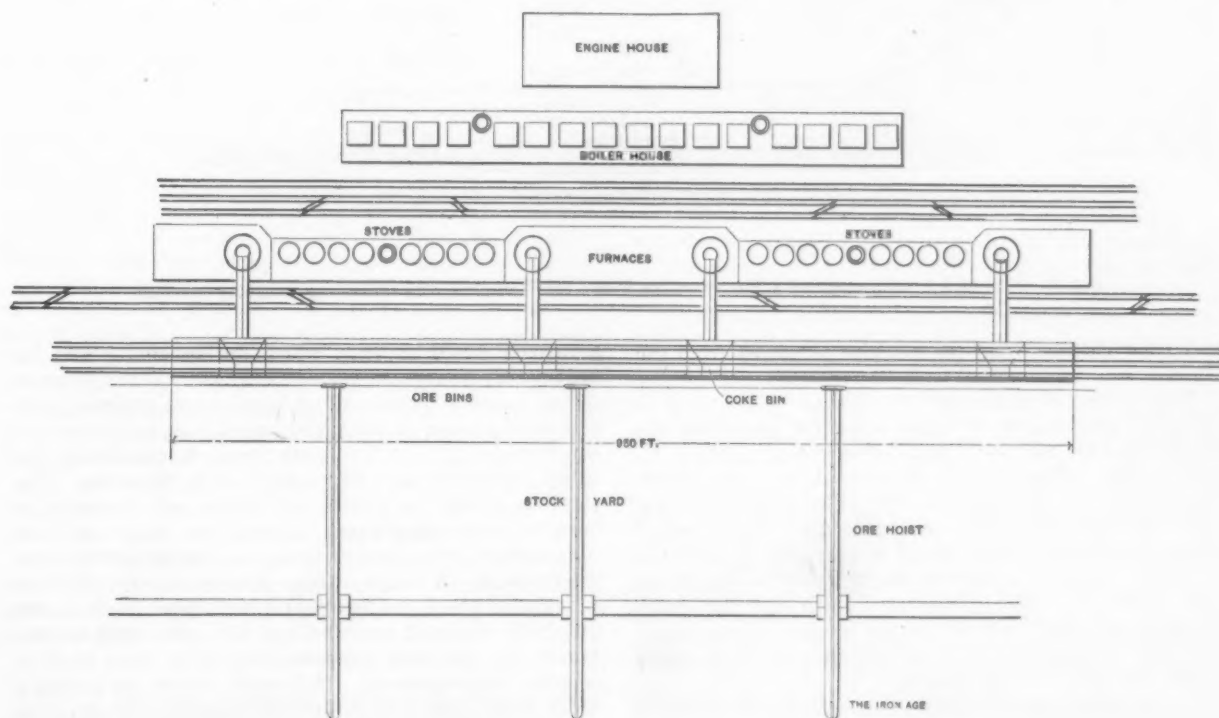


Fig. 5.—Furnace Plant of the Dominion Iron & Steel Company, Sydney, C. B., Showing Typical Arrangement of Four Blast Furnaces.

hopper or stock chamber is carried on the bell. To keep this hopper central and guide it in its vertical movement guide rollers are placed on the frame, which bear against rails attached to the hopper. On top of the frame work is placed a filling hopper, the position of which can be easily adjusted as may be desired. The pressure in the hydraulic cylinder is obtained from a motor driven force pump placed on the frame and the pressure is re-

closed in fire and dust proof casings. The electric current for operating the machine is controlled from a position at the hoist. The same operator who does the hoisting operates the machine.

Fig. 2 shows an arrangement for charging two furnaces with one machine. All the hoisting of stock is done at a point midway between the furnaces. The latter are connected by strong bridges with tracks for the traveling

charging machine, which carries a complete charge with each trip from the hoist to either furnace.

To prepare a charge for the furnace the charging machine is placed with the filling hopper under the skip hoist, and as the contents of the skips are dumped on the bell they are trimmed and distributed at will, which can be done by manual labor in comfort and safety away from the furnace. The furnace is normally closed by a cover, movable by usual means, and provided with explosion doors. The cover fits on the tunnel head ring, completely preventing gas escaping. There is no other machinery on the furnace top. With the charge completed the charging machine is moved to the furnace, the cover removed and the machine stopped on the center of the furnace. The discharge valve is then opened and the bell drops, carrying the stock chamber along. The bottom flange of the stock chamber will rest on the tunnel head ring, while the bell continues its downward movement discharging the stock. Immediately after the stock is discharged the pressure pump is started, raising the bell

prevents escape of gas. When it is necessary to remove bell or hopper, &c., from the furnace the charging machine may be used as a traveling crane for this purpose.

As a typical arrangement of a modern American furnace plant a plan of the Dominion Iron & Steel Company's furnaces at Sydney, Cape Breton, is shown in Fig. 5. The furnaces and stoves are built in one line parallel with the stock yard, and the stock bins extend over the whole length of the furnace plant, with coke bins located opposite each furnace. For each furnace there is an inclined hoist with two skip cars. There is no stockhouse over the bins.

In Fig. 6 is shown a proposed plan of a four-furnace plant of the same capacity, drawn to the same scale as Fig. 5, and arranged for charging with traveling charging machines. In this plan the greatest extension of the plant is in the other direction. The furnaces are lower in height, built on an elevation, at a distance of about 75 feet apart and connected by bridges. There are two skip hoists for the four furnaces. The stoves are placed on the ground level in two groups, with the boiler house between. The stock bins occupy less than half of the space of those in Fig. 5.

It is evident that a plant arranged in this way can be constructed with far less investment of capital. In most modern furnace plants a large number of storage bins are built at great cost, but no stockhouse or other means of protection for the stock is provided; consequently the freezing of ores in the bins is a source of constant annoyance during winter in cold climates. In a furnace plant arranged as in Fig. 5 a stockhouse may be built at com-

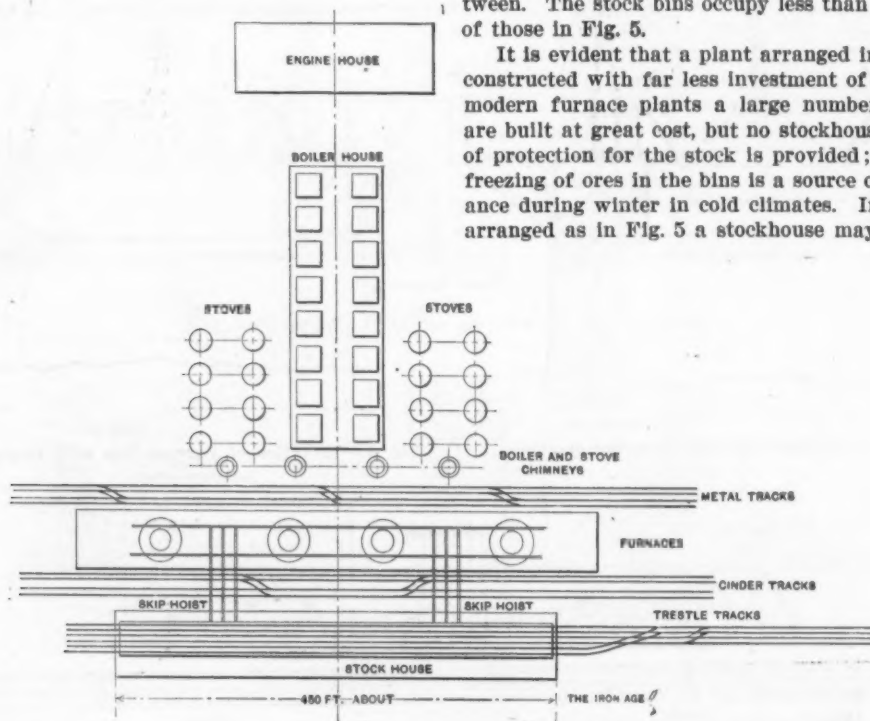


Fig. 6.—Proposed Arrangement of a Four-Furnace Plant for Charging with Traveling Charging Machine.

and stock chamber, and the machine is moved from the furnace and the cover put back in position.

An adverse criticism of this method of charging is that the employment of hand labor for preparing the charge and the escape of gas during charging are a return to old methods, but it is obvious that the advantages gained in fuel economy and metallurgical efficiency will more than offset these disadvantages. The principal advantages are the great saving in first cost of plant, the low cost of operating and the simplicity of the apparatus and facility for making repairs without shutting down the furnace. The condition of the furnace lining can at all times be examined, and the distribution of the stock can be varied as may be desired.

Another form of traveling charging machine is shown in Figs. 3 and 4, representing a section and a side elevation of a furnace top with the usual bell and hopper. For the sake of gaining head room the furnace bell is suspended from a horizontal beam, which is moved up and down by a pair of hydraulic cylinders. A frusto-conical shaped hood, with slots for the bell beam, is placed on top of the hopper. On the upper end of the hood is a heavy flange, forming the seat for the stock chamber of the charging machine. In this case the charging machine takes the place of the distributing cylinder and bell in the latest forms of charging apparatus. When the furnace bell drops the charging machine seals the top and

paratively small expense which during winter may be kept warm enough to prevent freezing. With furnaces placed closer together and of lower height, together with a smaller number of stock bins, much time and power are saved in conveying and hoisting the stock, considering the many trips that have to be made in a day's run. The stock yard may be located anywhere and the stock be brought in in hopper cars. If there is a coke oven plant connected with the furnace plant it should be located near the furnaces. A couple of bins of moderate size could be constructed above the furnace top level near the hoist for filling the charging machine, and the coke could be conveyed from the coke platform directly to these bins by means of belt conveyors. This would reduce the breaking up of coke caused by multiplied handling through cars and bins.

So much has been accomplished during late years in methods and plant for the economic production of steel—direct process, continuous processes, continuous mills, mechanical conveyors, &c.—that it is a question whether the limit of perfection has not already been reached. For further reduction in the cost of production we have to look to the blast furnace department. A great number of furnaces of mammoth size—100 feet or more in height—have been built during the last decade. Although noted for great quantity of product the experience with these large furnaces has not been altogether pleasing. The fuel

consumption has generally been too high for economy, and the loss caused by shutdowns has been great. Large furnaces were built in England many years ago, but soon proved a failure, and at the present time the prospect in this country is a return to moderate sized furnaces.

The operating of a large furnace plant involves the handling of millions of tons of materials annually. The most important factor entering into the cost of production is the freight charge on raw materials. In most cases the furnaces are located near the sources of fuel supply on account of difficulties connected with shipment of coke. But since metallurgical coke is now successfully made in retort coke ovens with recovery of by-products it is probable that in the future the furnaces will be built nearer the ore fields and coal shipped there. This will effect a great saving in the handling of the ore, nearly half of which is earthy matter, while in coal nearly all is available. In the furnace plant of the perhaps not distant future the boiler house will probably be entirely eliminated, and all power generators and blowing engines driven by gas from the furnaces and coke ovens. With dry air, good water supply, electricity as motive power and improved charging apparatus, there will be little left to be desired for economic production in the blast furnace plant of the future.

The Philadelphia Foundrymen's Association.

Quite a large attendance marked the one hundred and forty-sixth regular meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club in that city on April 5. The paper to be read before the meeting attracted not only a strong representation from the local foundries, but a number of visitors from Brooklyn, Baltimore, Reading and nearby places.

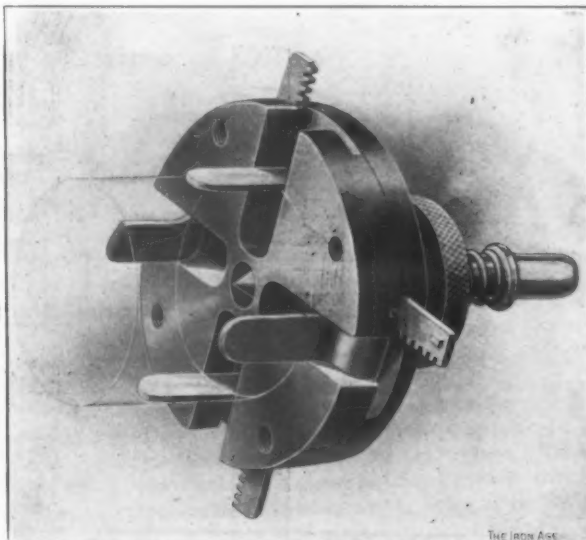
Thomas Devlin, president of the association, called the meeting to order at the usual hour. After routine business John A. Makem was introduced, who read a very interesting paper on the subject "Foundry Cost Accounts." He outlined, first, a system of accounts where costs are kept on all orders for castings; second, one where costs are kept on each particular line of product, and, third, a system of estimating costs where it is desired to keep them on new patterns only. The paper included also a discussion of general manufacturing expenses, embracing depreciation, &c., with special reference to cupolas, air furnaces and patterns. A large part of the data was taken from actual foundry practice, and so divided as to permit of computation on different methods to suit individual cases. Owing to the difficulty of following the details of the paper, the discussion which ensued partook of an individual mention of the methods employed by various foundrymen in estimating their costs. These differed in many cases, some basing them on the money value, others on the weight of product or pound system, while the percentage and the hour systems were also used. It was finally decided to postpone discussion of the paper until the next meeting, the members in the meanwhile to have an opportunity, by reason of the paper being printed in *The Iron Age*, to study the system in detail, and so be better prepared to discuss the various points presented. It will be found in another part of this issue. A vote of thanks was tendered Mr. Makem, after which the meeting adjourned to the roof garden of the club to enjoy a planked shad luncheon.

One of the most remarkable receivership reports ever submitted to the Court of Chancery at Newark, N. J., was made on April 4, when that of Robert E. Jennings, who was appointed receiver of the Carpenter Steel Company on November 5, 1903, was filed. The report shows that every claim and creditor of the Carpenter Steel Company has been paid in full, without discount of any sort, and that the receiver now has on hand more than \$38,000, from which amount are to be paid the receiver's fees and expenses. The report, after setting forth the reorganization plan formulated by the receiver and its acceptance, shows that his receipts have amounted to \$736,805.45, and that he has disbursed \$698,520.35, thus leaving a balance of \$38,285.10.

An Instantaneous Centering Tool.

There is the least waste of metal in turning objects from round or bar stock if the centers can be found with perfect accuracy before placing in the lathe. To locate the centers with precision is ordinarily somewhat tedious without the assistance of a special machine. The centering device illustrated, invented by C. A. Fiske, 161 East Sixty-seventh street, New York City, is unique for its simplicity and compactness, and makes possible the instant locating and marking of the center of stock up to 2 inches in diameter.

The principle of the device is apparent from the engraving, and little explanation is necessary to make its construction clear. The four projecting prongs might be compared to the jaws of a universal chuck, for although they have no gripping power, they are constrained to move simultaneously and symmetrically from or toward their common center, or, in other words, they are always maintained at equal radii from the center. Each prong is the laterally bent end of a narrow strip, one end of which is a rack, and all four racks engage a small pinion concentric with the center of the tool. The pinion is connected with a knurled knob on the back of the device,



An Instantaneous Centering Tool.

which when rotated causes the prongs to recede uniformly from the center. When the knob is released a coiled spring tends to return the prongs to the center.

To use the tool the prongs are first opened by turning the knob, and the piece to be centered is inserted between the prongs, as indicated in the illustration by the piece of phantom stock. The knob being then released the prongs close on the stock and adjust the device so that its center coincides with the geometrical center of the cross section of the stock. The marking is performed by striking with a hammer the end of the rod projecting from the back. This rod is in effect a center punch, slidably mounted in the holder. It has a tempered point at the face end, which is removable for grinding or replacing, and is normally held recessed from the face of the holder by a spiral spring. When the marking has been made the device is slipped from the end of the stock and in less than a minute's time the operation has been performed and with perfect accuracy.

A sensitive fire alarm which acts only upon the generation of a sudden wave of heat has been devised by an Danish inventor. A U-tube 4 inches high is partly filled with mercury, with sulphuric ether above, and both ends are closed. Over one end is a nonconducting cap. A gradual rise of temperature will warm the entire apparatus, while a sudden rise, as in a fire, will so rapidly heat the ether in the side which is not insulated as to cause a rapid expansion on that side, forcing the mercury up into the other arm and closing a contact, which rings an alarm.

Gas Blowing Engines.*

BY TOM WESTGARTH, MIDDLESBROUGH, ENGLAND.

Probably the pioneers in driving blowing engines with blast furnace gas upon a practical scale were the Société Anonyme John Cockerill of Seraing, Belgium, and B. H. Thwaite of London. The Cockerill Company exhibited the first of its 800 horse-power gas driven blowing engines at the last Paris Exhibition, and it was quite a revelation to engineers and iron makers. The care with which the engineers prepared their designs is shown in that they are at present building engines of the same type with but few modifications. The vertical blowing engine with two horizontal gas cylinders designed by Mr. Thwaite has been modified as to the air valves and certain working parts, and is interesting as being an early instance of the arrangement, since largely used, of the combined vertical and horizontal engine.

The first really large installation of gas blowing engines was built by the Cockerill Company for the Differ-

rather light. Horizontal Körtting engines, driving vertical air cylinders, are installed at the Lackawanna Works at Buffalo. There are two gas engines to each blowing cylinder—either of the engines being capable of doing the work. These gas engines were built in New York and the blowing engines by the Southwark Foundry & Machine Company, the air cylinders being fitted with its patent balanced sliding valves, further particulars of which will be given. There are eight of these engines now erected and a similar number in progress. The blowing cylinders are each 76 inches diameter, 60 inches stroke, designed to blow up to 30 pounds blast pressure and to run at 80 revolutions per minute normally, but up to 90 revolutions when required.

A 1200 horse-power blowing engine built by the Cockerill Company has two single acting gas cylinders and one double acting blowing cylinder. A considerable number of these engines have been built by the company and its concessionaries. Another 1200 horse-power Cockerill engine, with one double acting gas cylinder, has just been completed and represents the Cockerill Company's latest

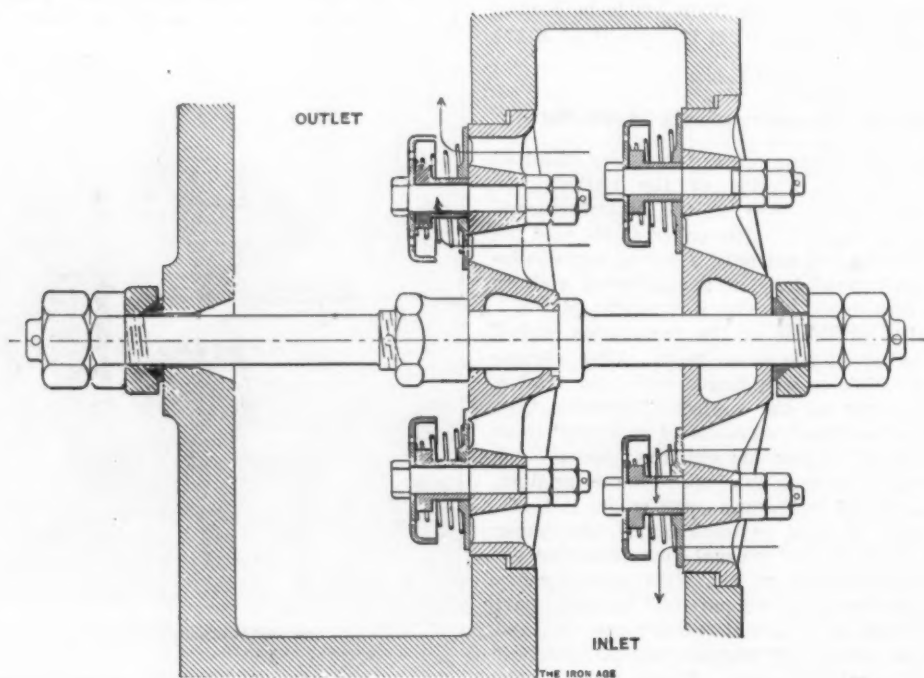


Fig. 1.—Spring Loaded Disk Type of Valve Used on the Air Cylinder of the Cockerill Gas Driven Blowing Engines.

dange Works in Germany and consisted of six 800 horse-power blowing engines and three dynamo engines of the same size. Some trouble was experienced with parts of these engines when they were set to work, owing to lack of knowledge in the art of sufficiently cleaning the gas, but these difficulties were soon overcome and the installation has been most satisfactory and is now being enlarged.

According to the latest information there are now in Europe and America about 157,000 indicated horse-power of gas driven blowing engines running or under construction, all being in Europe except the engines at Lackawanna, of which particulars are given later on. In the United States many of the leading iron makers and engine builders are seriously considering the adoption of gas engines, and already several engineers have bought concessions for building engines of various types.

Another early gas driven blowing engine was that built by Messrs. Crossleys of Manchester, on the *vis-à-vis* arrangement and fitted with a form of air valve having very large clearance spaces. It has two single acting gas cylinders and two single acting blowing cylinders. The Oechelhauser blowing engine, which is built in Glasgow, is probably more or less well known. The Premier gas blowing engine has two single acting gas cylinders and one double acting blowing cylinder fitted with Corliss valves. The engine is a neat design, but it appears

practice. The gas and air inlet valves are on the top of the gas cylinder and exhaust valves underneath. This arrangement has now been adopted as the standard by this company. This engine is also fitted with the Southwark Foundry & Machine Company's patent sliding air valves. An 800 horse-power gas blowing engine built for the Summerlee & Mossend Iron & Steel Company, Limited, at Coatbridge, represents present standard practice, except that it is now preferred to place the gas and air inlet valves on top of the cylinder and as a rule to make the gas cylinder double acting, so as to keep its size down. The engines are of very heavy design. They weigh about 190 tons each, of which the fly wheel is 30 tons, and they are designed to run at about 75 revolutions per minute and to blow up to any required pressures. The engines referred to have each one single acting gas cylinder, 51¼ inches diameter by 55 inches stroke, arranged to work on the Otto cycle. They are fitted with duplicate electric igniting gear and are started by means of a benzine carburetor or compressed air, as is most convenient, an electrically driven barring gear being fitted to operate on a rack on the fly wheel. With very little practice the attendants can almost invariably start the engines at the first try, and the arrangements are such that so long as the barring engine is in gear the electric current cannot pass to the igniting gear, so that the engines cannot be started until the barring gear is thrown out. The engines are very completely water jacketed throughout, including pistons, piston rods, exhaust valve with its

* Abstract of a paper presented before the West of Scotland Iron and Steel Institute, Feb. 1905.

chamber, &c., and by an ingenious arrangement a float is provided in the tank collecting the waste water from the jackets and so arranged that if the flow ceases the electric igniting gear is disconnected and the engines stop automatically. These engines are controlled by an air cataract governor, with the usual hit and miss arrangement, but when the inlet valves are placed on the top of the cylinder it is usual to control the engines by a powerful ball governor, which varies the cut off of the gas supply valve. An arrangement is provided for holding open

air valve of the Southwark Foundry & Machine Company, now largely used by the Cockerill Company for fast running steam and gas driven blowing engines, especially where high blast pressures have to be dealt with. The valve is largely used under the same conditions in America and is fitted to the gas blowing engines at Lackawanna. The arrangement is one by which the clearance can be reduced to less than $1\frac{1}{2}$ per cent., and as the outlet valve does not open until the pressure is equal on both sides there is practically no friction. The valve is operated

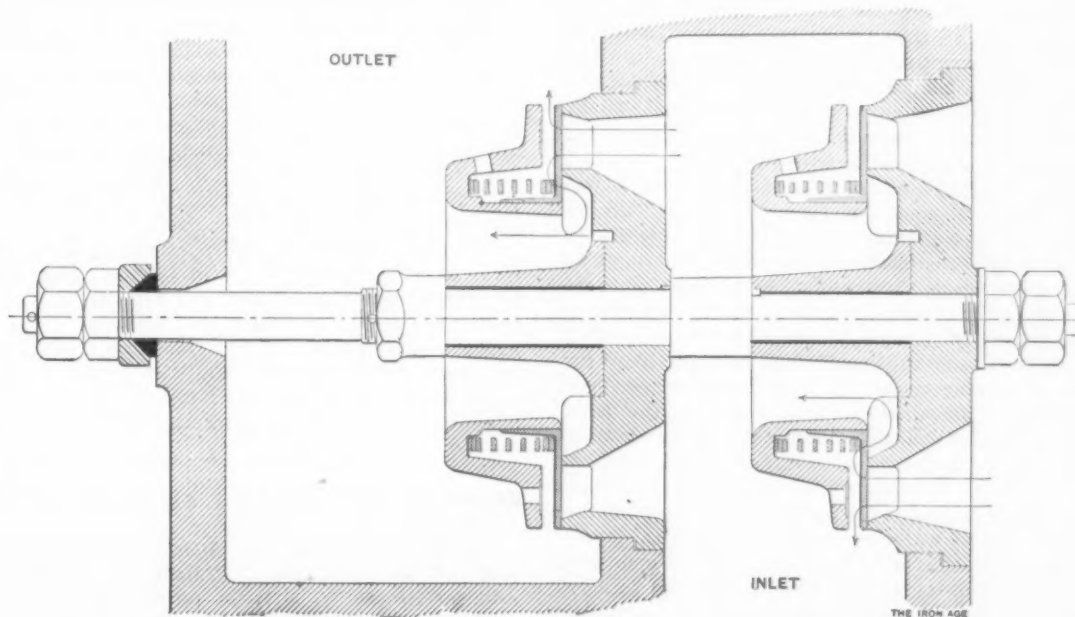


Fig. 2.—The Ehrhardt & Sehmers Air Valve, Somewhat Similar to Fig. 1 but Suitable for Higher Pressure.

some of the inlet valves in the air cylinders when starting the engines. These valves can also be held open for a part of the piston stroke, so that the volume of air may be reduced a little when excessive pressures are required, thus keeping the total work sufficiently constant for the requirements of the gas engine. The crank shaft and other important bearings are fitted with ring lubricators as used in dynamo practice, and the cylinders, with their internal parts, are lubricated under pressure from a

by the air cylinder attached to the end of its spindle, but, as you will see, there is also positive means of operating the valves in case the air cylinders should not act quickly enough.

A doubt is often expressed as to the continuous running and also as to the regularity of gas engines. In a years' running of two 700 horse-power gas engines, driving dynamos at the Cockerill Company's works, each engine having two single acting cylinders and running at 120 revo-

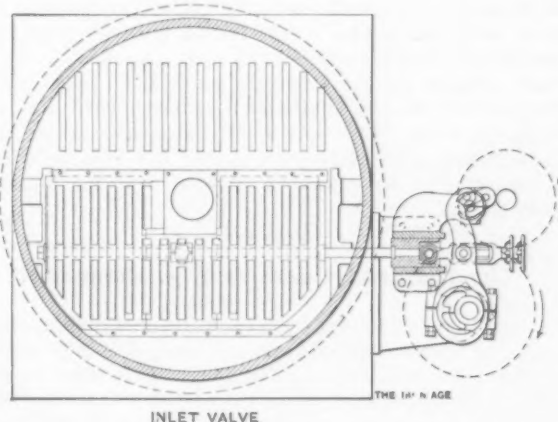
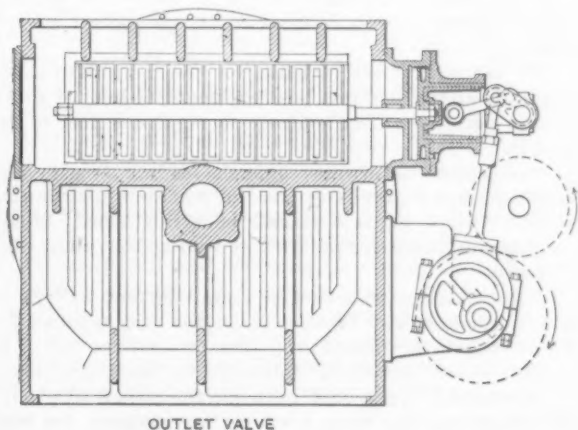


Fig. 3.—Balanced Sliding Air Valve, Designed by the Southwark Foundry & Machine Company for High Speed Blowing Engines.

pump upon the engine with suitable sight feed connections.

The question of valves upon the air cylinder of a gas driven blowing engine is a very important one, because of necessity such an engine must run continually at a high speed. Fig. 1 is a detailed drawing of the ordinary spring loaded disk valves used by the Cockerill Company for ordinary low pressures with satisfactory results. Fig. 2 is a detailed drawing of Ehrhardt & Sehmers' patent valve, of somewhat similar design, but suitable for higher pressures, which has been used with good results. Fig. 3 gives details of the patent balanced sliding

lutions per minute, there were very few stoppages, such as occurred being almost entirely in connection with matters outside the gas engines, such as the dynamos, &c. The blowing engine which was erected recently at Summerlee has been running since December 14 almost without stop, the few short stoppages that have occurred being, with very slight exception, from causes outside of the gas engine. It may also be of interest to know that this engine is being run by three men in two 12-hour shifts, one engineman on the day shift and one engineman on the night shift, with a laborer to do the necessary cleaning, &c.

There is considerable misapprehension as to the quantity of gas, oil and cooling water used by large gas engines. These engines can run with about 100 cubic feet of Cleveland blast furnace gas per brake horse-power per hour. If producer gas is used the consumption is about 76 cubic feet and if coke oven gas about 32 cubic feet. The consumption of oil is not excessive; in the case of the engine at Summerlee not more than 5 gallons per 24 hours. Part of the oil is filtered and used again. The water for cooling the jackets, pistons, &c., is about 12 to 14 gallons per brake horse-power per hour of cold water; this can be cooled and used again, the loss by evaporation being not more than about 3 per cent.

One of the most important matters in connection with the use of gas blowing engines is, of course, the cleaning of the gas. This was in most cases accomplished at first by the use of an ordinary fan with water, but it has been found that generally such an apparatus is not sufficient, although tried two and even three in series. This has led to the adoption of many devices, the best of which for dealing with gas from furnaces using coke is perhaps the Theisen apparatus.* This consists of a revolving barrel with vanes on its periphery, water being injected by nozzles at the side of the apparatus. A number of these machines have been built and found to clean blast furnace gas containing about 4 to 5 grams of dust per cubic meter down to 0.008 gram per cubic meter by the use of less than $\frac{1}{2}$ liter of water per cubic meter of gas; whereas the best results by the use of a fan are those published by Mr. Cochrane, who reports having cleaned Cleveland gas to 0.032 gram per cubic meter by the use of rather less than 1 liter of water per cubic meter of gas.

A very interesting experience was had at Summerlee, where the gas blowing engine is using gas from furnaces burning coal, the gas passing through a very complete by-product recovery plant before going to the engine. It was expected that the gas would be sufficiently clean, but upon starting the engine it was found to contain a considerable quantity of tar. The Summerlee Company's officials then invented and patented an apparatus which has effectually overcome the difficulty, and has proved to be a valuable source of finding tar which was not known to exist in the gas.

Questions are frequently asked as to the relative cost of gas and steam engine blowing plants. Comparing a gas engine with its cleaning plant, &c., of a moderate sized installation, with a first-class steam blowing engine plant with condensers and water tube boilers, the cost is practically identical, but as the amount of gas used for driving the gas engine is less than a quarter of that required for raising steam in gas fired boilers, it is manifestly wise to use gas blowing engines in all cases where the gas so saved can be utilized for other purposes, as, for instance, where there is a steel works near to the furnaces. The ease with which power can now be transmitted electrically opens up a wide field for utilizing surplus gas.

The Diamond Chain & Mfg. Company.

The Diamond Chain Factory, located at Indianapolis, Ind., has been purchased from the Federal Mfg. Company by the Diamond Chain & Mfg. Company, headed by Lucius M. Wainwright, who for the past five years has been the manager of the plant. The severance from any former ownership is complete, the entire stock of the new company being owned by Mr. Wainwright and a few local capitalists, Mr. Wainwright owning a controlling interest.

The factory began operation in 1890, and the rapid growth of the business has twice necessitated increased quarters. The present plant, which has been largely increased within the year, is claimed to be the largest of its kind in the world and is the only one in America devoted exclusively to the manufacture of pitch chains. The activity of its business is so great that it necessitates the keeping of stock on hand for 1,000,000 feet of chain.

* Illustrated description of the Theisen gas washing apparatus was given in *The Iron Age* of August 18, 1904.

The full capacity of the plant in all its various departments is 5,000,000 feet per year. The number of operators employed varies from 250 to 300. The product covers a wide range in styles and pitches, varying from those weighing only a fraction of an ounce per foot to those weighing 30 pounds per foot, including chains for hoisting apparatus, conveyors, automobiles, bicycles, cables, balancing and many other special designs.

The factory is a model one, system, cleanliness, accuracy and quality being the foundation for all of its product. The plant is filled with automatic machinery operated by 28 motors. Thousands of feet of chain are used throughout the mill in addition to over four miles of leather belting. An independent gas plant is operated for case hardening and tempering, and the uniformity of the heat treatment is gained by a thorough system of pyrometry, scientifically operated, such as is used by the twist drill manufacturers. A thorough experimental and testing department is maintained, and the whole plant shows prosperity and progress.

The new company is incorporated under the laws of Indiana, with a capital stock of \$400,000, fully paid up, \$300,000 of which is common and \$100,000 is 5 per cent. preferred stock. The officers are: President, L. M. Wainwright; vice-president, E. C. Dunmeyer; secretary and treasurer, A. D. Johnson. Mr. Wainwright is generally regarded as one of the best informed men in the country on the subject of chain transmission of power.

Rear-Admiral Melville's Views on the Navy.

In an address before the American Academy of Political and Social Science in Philadelphia, April 8, Rear-Admiral George W. Melville, retired, declared that the public at large, as well as Congress, now recognized the fact that the defense of the United States must primarily be intrusted to the navy. Unless a possible foe had some hope of securing command of the sea against the strongest opposing fleet that we could assemble, he said, no nation would undertake the task of fitting out a possible armada to attempt either the blockade or the invasion of our coast. He continued:

"The lessons of the Russo-Japanese War are plain. For the next few years it should be in the special direction of developing the auxiliaries of naval strength and not toward augmenting the number of fighting ships wherein we should direct our best energies.

"The bulk of the expenditures for increasing the efficiency of our navy should, however, be applied as follows:

"The preparations of plans for the immediate abandonment, at the slightest possible financial loss, of every distant possession that is likely to require a fleet to defend it.

"Improvement of the channels leading to all ship-building plants, naval stations and maritime distributing ports. These channels should be straightened, broadened and deepened for military as well as for commercial reasons.

"The building of a fleet of large and fast colliers, so that in time of war practically all the coal required for naval operations distant from our own shores would be available for immediate shipment to the place where most needed. We should abandon the policy of placing any great reliance upon fixed coaling stations, for coaling stations will have to be defended by ships as well as by fortresses, and will more likely prove a military detriment than a strategic advantage.

"The recognition of the fact that the modern navy is an engineering one, and that the training of both officers and men should be more technical in character. The time spent by apprentices and landsmen on sailing vessels is practically wasted."

The Minneapolis Steel & Machinery Company, Minneapolis, Minn., has obtained from the Green Consolidated Copper Company the contract for building the new reverberatory furnace at Cunanea, Sonora, Mexico. The building of an ore bedding plant is included in the contract. More than 600 tons of structural steel will be required.

Lake Iron Mining Matters.

Iron Ore Movements.

DULUTH, MINN., April 10, 1905.—The first ore was loaded at mines of the Gogebic range last week Tuesday, and the docks at Ashland are filling with ore. The port will not be open for some time, as it is in a bay which does not thaw readily. Ore has arrived at Marquette docks from Ishpeming, arriving there April 7. Shipments were made during the week from the Two Harbors docks, from the Mesaba range, and the docks of the Duluth, Missabe & Northern road are rapidly filling. Escanaba has commenced shipments and every port on the lakes is open.

Deerwood Region Explorations.

The Orelands Company, Duluth, was the original interest doing exploration in the Deerwood region west of Duluth and along the main line of the Northern Pacific Railroad. This company has just held a special meeting at which a report of the year's work was read by the president, Cuyler Adams. This report stated that since the annual meeting in 1904 additional exploration was made on the company's lands on section 16, T. 46, R. 28, Crow Wing County, and at least 1,000,000 tons of low grade ores can, in the opinion of the president, be said to be shown up there. This ore averages about 48 per cent. iron, with some assays running up to 55 and 58. On the Marriot property to the southwest of section 16 a body of ore at least 100 feet wide has been shown up; this ore is very hard and is difficult drilling. Indeed, it was impracticable to drill it with the Davis calyx drill that the company had been able to use elsewhere. So far as shown up this ore body assayed about 50 per cent. Adjoining the Marriot lies the Rasch, which has not been drilled, but private parties who have worked on the other side of the Rasch have shown a body of ore that is said to average about 57 per cent. The president concludes that "unquestionably the ore extends under the Rasch." In another locality on the company's lands explorations have shown a body of ore "at least 125 feet wide and at least 100 feet deep," holes at that depth being bottomed in ore. This contains "as far as shown about 1,000,000 tons, a large part of which would average in combined units of iron and manganese from 57 to 58 per cent., with about 0.1 to 0.3 phosphorus and with the manganese averaging over a large part of the property as high as 13 per cent." On private properties in the southwestern part of this new range explorations have shown ores at some points, continues the report. "In the case of Pickands, Mather & Co. there have been showings of ore running up to 50 per cent. for a depth of 125 feet, of which 60 feet was about 55 per cent., and in another hole where the drill has just cut ore the indications are still better." Explorations by another private interest have not yet made any very favorable showings, it is reported. The statement concludes that "this is all that can be reported up to the present time on the lands of the company, which cover about 950 acres." At this meeting of the Orelands Company it was decided to offer for sale to the highest bidder among the stockholders a certain amount of its shares in order to pay off some outstanding indebtedness and to continue exploration of favorably located lands, and Mr. Adams was continued as president.

The so-called Deerwood range was discovered by Mr. Adams after considerable work, and he has been very enthusiastic over it for some years. Indications by the dip needle, carried on by him, have indicated that an ore bearing formation, or at least a magnetic attraction, exists running through Crow Wing County with a strike northeast and southwest for about 18 miles. This commences in section 13, T. 46, R. 27, about two miles east from the village of Deerwood, and a mile south of the Northern Pacific Railroad and continues parallel to that road to a point in section 31, T. 45, R. 29, about a mile southeast of the village of Brainerd. Near the east end of this course the work mentioned above has been carried forward during the past two years. In section 36, T. 46, R. 28, ore has been cut and the formation exposed, and still further to the southwest there are other

workings that indicate the continuity of the formation. In sections 4, 8, 9 and 18, T. 45, R. 28, are strong indications and some ore has been shown at various places. The characteristics of the region are a low grade ore, non-Bessemer, but it may exist in some considerable quantity.

There is not a rock outcrop in Crow Wing County, and the entire work of tracing the formations, &c., was done by Mr. Adams with the magnetic needle. There are greenstone and quartzite exposures east and south, in Aitkin and Morrison counties, and there is a great deal of jasper and iron formation float all through Crow Wing, probably brought down from the north. It is yet to be determined that this district is of importance in the ore bearing territory of Minnesota. It seems that the new range, if such it may be called, is more nearly akin to the Gogebic than to any other in the Lake region. It has a dip somewhat similar, though steeper, and pitches to the north. That it is not correlated to the Mesaba seems positive. Some examinations of the district have been made on behalf of the Government, and a report covering the results of this work will be published in course of time. Of course this examination has been exceedingly preliminary and cursory, for there has not been much to show. The firm of Pickands, Mather & Co., mentioned in this report to the Orelands Company, has been at work there since last fall, and has considerable land under option from the Orelands on which it is engaged in exploration.

Drake & Stratton in Receiver's Hands.

The contracting firm of Drake & Stratton, which is engaged in extensive stripping operations on the Mesaba range, has been put in the hands of a receiver, Joshua Wainwright, of Philadelphia, its president, being that officer. It is explained that this is a friendly receivership, to clear up matters of ownership and that the company is solvent. This single company expects this year to remove at least 2,000,000 yards of dirt and overburden from the mines of the Mesaba range. It has nine steam shovels that will all be at work in a few days and is employing about 1000 men. Two or three shovels will be operated in stripping at Stevenson mine, and the first of these is at work; three or four will be run at Fayal, one of which started up to-day; one will be operated at the Morris, a new mine belonging to the Oliver Iron Mining Company and one or two more will be used on other contracts. The company claims that labor is plentiful, which is probably true, for it uses a class of labor that is in excess in this district most of the time, and that it is paying \$1.75 per day for unskilled men.

There are some open evidences of labor unrest in the lake copper country, and strikes are on at a few mines. Reports are that these are liable to extend to several more in the upper peninsula copper region, and mining companies are arranging for a new supply of miners if needed. As far as the iron regions are concerned there are few signs of disturbance, though one or two small strikes have occurred at the mines of companies that are more frequently in trouble with their men than most operators. It looks as though the year would pass without very much trouble, and if contracts with labor unions are worth anything it certainly will so far as some important branches of the ore trade are concerned. The vessel interests, both on big ships and tugs and at docks, &c., have made agreements that ought to prevent any delay or difficulty.

D. E. W.

Buffalo is to be well supplied with transmission and distributing companies for conveying the electrical energy developed at Niagara Falls to users of power throughout that city, the fourth distributing company, the Niagara Falls Electrical Transmission Company, having applied for permission to lay conduits and distributing cables. The companies already engaged in distributing Niagara Falls power in Buffalo or constructing plants for that purpose are the Buffalo General Electric Company, the Cataract Power & Conduit Company and the Iroquois Electric Company.

A Gasoline Mine Locomotive.

What is spoken of as the first gasoline mine locomotive ever built was recently shipped by the Charles Kaestner Mfg. Company, South Bend, Ind., to the Britannia Copper Mining Syndicate, Vancouver, British Columbia. The great advantage claimed for the gasoline locomotive is that it eliminates the expense of equipping and maintaining a central power house, such as is required for electric locomotives. Economy of actual opera-

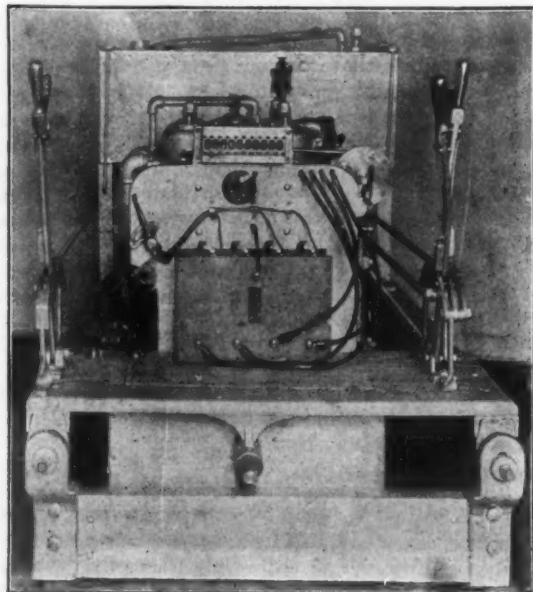


Fig. 1.—Front View of the Body of the Kaestner Gasoline Mine Locomotive.

tion is also claimed. The accompanying illustrations show two views of the upper works of the locomotive, which were shipped without trucks, the trucks being supplied by the purchasers.

The power is generated by a four-cylinder 35 horsepower vertical gasoline motor, direct connected to the main driving shaft by a system of gears for obtaining a direct or high speed and a slow speed. On the main

chain. A 2 and 5 mile speed either forward or backward is attained.

To cool the motor 150 feet of $\frac{3}{8}$ -inch copper tubing with radiating disks are used, over which air is blown by a fan driven at high speed by belt from the main shaft of the motor. The water tank holds about 30 gallons of water. The carburetor is of the usual float feed type, and all bearings are lubricated by a mechanical oil feeder operating from the main shaft of the motor. The ignition is by jump spark, current being supplied by a magneto. A feature of this outfit is the absorbing of the impure exhaust gases by discharging them into a tank of water. By this means the odor is largely destroyed and the sound of the explosions deadened. The locomotive complete weighs about 8 tons, and has a hauling capacity of 60 tons at 5 miles per hour on the rails. It has sufficient storage capacity for fuel and water for several hundred miles' run. The engine is anchored on a sub-frame, which is carried on ten cup springs.

The Charles Kaestner Mfg. Company removed from Chicago to South Bend about a year ago, and is mainly engaged in the manufacture of automobile specialties, the mine locomotive being a departure from its regular line. The officers are: J. G. Lobstein, Jr., president; Adolph Kaestner, vice-president; Edward B. Reynolds, treasurer, and Chas. D. Cutting, secretary.

French Shipbuilding Bounties.—The new law on the French merchant marine deals first with construction and provides a bounty of 145 francs and 95 francs per ton burden for steel steam and sailing ships, respectively, in the first year of the application of the law, and the rate will be regularly reduced annually for the first ten years following, so that at the end of that period the respective premiums will be 100 francs and 85 francs. Wooden vessels are to be subject to premiums of from 30 francs to 40 francs, according to size and description. To encourage the construction of marine machinery in France there will under the same law be an allowance of 27.50 francs per 100 kg. weight on various classes of machinery inclusive of electric machines used on board ship, which premium is also to be subject to an annual reduction until the level of 20 francs per 100 kg. is reached. The law is fixed at 12 years' duration, and is applicable only to vessels constructed, engined and boilered in France and of French

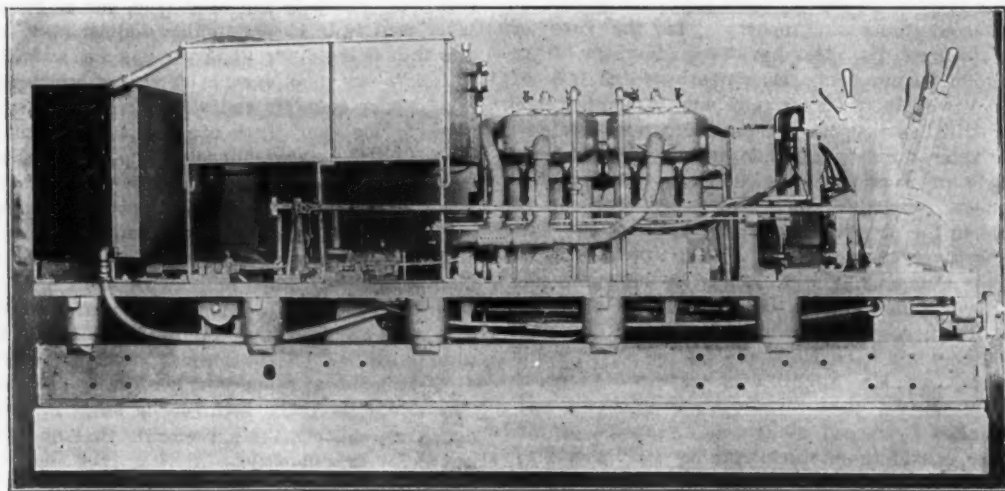


Fig. 2.—Side View of the Upper Works of the Kaestner Gasoline Mine Locomotive.

transmission shaft is a bevel pinion which operates two five-plate friction clutches. To the face of each clutch is attached a large bevel gear. Both of these gears are always in mesh with the bevel pinion. The friction plates are attached to a 3-inch shaft passing through the friction clutch, and power is applied slowly by the tightening of the friction plates and bevel gears on either side. Two forward and two reverse speeds are provided. From the jack shaft which passes through the clutch the power is transmitted to the rear axle by a large roller

manufacture; and the provisions of the law may be extended to such French colonies as may be able to produce iron or wooden vessels for navigation purposes.

The Tabor Mfg. Company, Eighteenth and Hamilton streets, Philadelphia, Pa., announces that as E. H. Mumford, formerly secretary and treasurer, has severed his connection with the company, all business communications should hereafter be addressed to the Tabor Mfg. Company direct.

Voidable Preferences in Bankruptcy.

The United States Supreme Court Renders an Important Decision.

WASHINGTON, D. C., April 11, 1905.—One of the most important bankruptcy decisions since the Federal statute of 1898 was enacted has just been rendered by the United States Supreme Court in the case of Keppel, trustee, &c., *vs.* the Tiffin Savings Bank, the question at issue being whether a "creditor of a bankrupt who has received a voidable preference and who has in good faith retained such preference until deprived thereof by the judgment of a court upon a suit of trustee can thereafter prove the debt so voidably preferred." The question is collateral to the issue heretofore determined by the Supreme Court to the effect that payments on account, received by a creditor within four months of the filing of a petition in bankruptcy, constitute preferences which must be surrendered before such creditor may be permitted to prove the balance of his claim.

In the case upon which the court has just ruled the bank had received a preference in the shape of a mortgage note, which it claimed the right to hold until deprived thereof by the trustee by due process of law, and thereafter to come in and prove the original claim with a view to securing an equitable share of the bankrupt's assets. Several bankruptcy courts in various jurisdictions have held that a creditor who compels a trustee to sue for the recovery of a preference is thereby debarred from proving his original claim, but the Supreme Court reverses these rulings in a sweeping decision in which the subject of preferences is very comprehensively expounded. The opinion is in part as follows:

Supreme Court's Opinion.

"On the one hand it is insisted that a creditor who has not surrendered a preference until compelled to do so by the decree of a court cannot be allowed to prove any claim against the estate. On the other hand it is urged that no such penalty is imposed by the Bankrupt act, and hence the creditor, on an extinguishment of a preference, by whatever means, may prove his claims. These contentions must be determined by the text, originally considered, of section 57g of the Bankrupt act, providing that 'the claims of creditors who have received preferences shall not be allowed unless such creditors shall surrender their preferences.'

"We think it clear that the fundamental purpose of the provision in question was to secure an equality of distribution of the assets of a bankrupt estate. This must be the case, since, if a creditor, having a preference, retained the preference, and at the same time proved his debt and participated in the distribution of the estate, an advantage would be secured not contemplated by the law. Equality of distribution being the purpose intended to be effected by the provision, to interpret it as forbidding a creditor from proving his claim after a surrender of his preference, because such surrender was not voluntary, would frustrate the object of the provision, since it would give the bankrupt estate the benefit of the surrender or cancellation of the preference, and yet deprive the creditor of any right to participate, thus creating an inequality. But it is said, although this be true, as the statute is plain, its terms cannot be disregarded by allowing that to be done which it expressly forbids. This rests upon the assumption that the word surrender necessarily implies only voluntary action, and hence excludes the right to prove where the surrender is the result of a recovery compelled by judgment or decree.

Surrender Need Not Be Voluntary.

"The word surrender, however, does not exclude compelled action, but, to the contrary, generally implies such action. The word, of course, also sometimes denotes voluntary action. In the statute, however, it is unqualified and generic, and hence embraces both meanings. If it had been contemplated that the word surrender should entail upon every creditor the loss of power to prove his claims, if he submitted his right to retain an asserted preference to the courts for decision,

such purpose could have found ready expression by qualifying the word surrender so as to plainly convey such meaning. Indeed, the construction which would read in the qualification would not only create a penalty alone by judicial action, but would necessitate judicial legislation in order to define what character and degree of compulsion was essential to prevent the surrender in fact from being a surrender within the meaning of the section.

"It is argued, however, that courts of bankruptcy are guided by equitable considerations, and should not permit a creditor who has retained a fraudulent preference until compelled by a court to surrender it to prove his debt and thus suffer no other loss than the costs of litigation. The fallacy lies in assuming that courts have power to inflict penalties although the law has not imposed them. Moreover, if the statute be interpreted as it is insisted it should be, there would be no distinction between honest and fraudulent creditors, and therefore every creditor who in good faith had acquired an advantage which the law did not permit him to retain would be subjected to the forfeiture simply because he had presumed to submit his legal rights to a court for determination.

All Creditors on Equal Footing.

"We are of opinion that, originally considered, the surrender clause of the statute was intended simply to prevent a creditor from creating inequality in the distribution of the assets of the estate by retaining a preference and at the same time collecting dividends from the estate by the proof of his claim against it, and consequently that whenever the preference has been abandoned or yielded up, and thereby the danger of inequality has been prevented, such creditor is entitled to stand on an equal footing with other creditors and prove his claims."

The court therefore decides that the creditor who elects to compel the trustee to determine the voidability of a preference by bringing suit to recover it in no wise impairs his right to share in the bankrupt's estate after such preference has been surrendered, either voluntarily or involuntarily.

W. L. C.

The North Butte Mining Company.—Under this name a company has been formed at Duluth, Minn., to take over and operate some important developed and undeveloped mines and mining claims at Butte, Mont. Its directors are James Gayley and D. M. Clemson of New York, and T. F. Cole, W. J. Olcott, L. W. Powell, J. B. Cotton, J. U. Sebenius, C. A. Duncan of Duluth, and James Hoatson of Calumet, Mich. Messrs. Cole, Olcott, Powell, Cotton and Sebenius are, respectively, president, general manager, assistant to general manager, counsel and manager of explorations for the United States Steel Corporation's mine end. Mr. Hoatson was for many years manager of the Boston & Montana Copper Company, and discovered the Calumet & Arizona at Bisbee. He will be president. Mr. Duncan is president of the Great Northern Power Company of Duluth, and will be treasurer. The stock of the North Butte Company was oversubscribed 100 per cent., in Duluth, New York, Pittsburgh and Northern Michigan, and was cut 50 per cent. to all applicants. As the existence of the company was not known outside of a small circle in these cities, and as the lists were closed in less than four days after the first information had been known, the remarkable character of the subscription is shown. The company is capitalized at \$6,000,000, and this amount has been called, to be paid in before May 15. The reputation of Messrs. Cole and Hoatson and their success in mining made this stock go as it did, and the subscription was almost entirely from men who have been associated with them in Arizona coppers, or have known of their ability in other lines of their work. The North Butte takes over properties that are earning, net, at the present time more than \$1,500,000 a year, and that can probably be made to earn without any increase in tonnage a very considerable addition, while it is intended to increase the tonnage as fast as is consistent with good management.

Foundry Cost Accounts.*

BY JOHN A. MAKEM, EVENING SCHOOL OF ACCOUNTS AND FINANCE, UNIVERSITY OF PENNSYLVANIA.

The subject of foundry cost accounts is a difficult one to handle owing to the widely diversified conditions which exist. It will not be the object of this paper to attempt to lay out an inflexible method of ascertaining costs so much as to discuss the principles involved. Cost accounts should be adapted to the business; not the business to the cost accounts.

The correct system of cost accounts is the one which dovetails into the financial books, which is not feasible in the majority of foundries. In fact, it may be said without fear of contradiction that there are many foundries wherein it would be impossible to install an adequate system of cost accounts. There are, however, various methods of estimating costs, but the words "estimate" and "accounts" are not synonymous.

Receipt of Order.

When an order is received it is entered in the order book and a serial number assigned thereto. If there be a number of divisions on the order, each division can be assigned a letter; for instance, 500 C would mean the third division of order 500, and this distinction should follow the pattern and casting, and the molder or timekeeper, as the case may be, should report it in like manner. In small work foundries where certain patterns are always in the sand a permanent order number should be assigned to each pattern, and all the expense should be charged to that order number. The production cost can then be ascertained by dividing the number of units produced during a specific period into the expense charged to the order during that period.

Method of Advising Organization.

There are foundries wherein it is customary for each party interested to have a small order book in which the order clerk must write a description of each order. The foreman of the foundry, pattern shop, core shop, the timekeeper, the man in charge of the cleaning and assorting and the shipper all have books. The necessity of rewriting the order so many times is overcome by the use of the hectograph.

Have an order form printed in copying ink on which the order clerk can write a description of the order, the order number, and a rough drawing of the pattern, if necessary, in hectograph ink. As many as 20 copies can be made from one original. Each party receiving a copy should have a squirrel tail file, on which to retain his copies in serial order. If the timekeeper marks on his copy the number and name of the molder, and, if desired, the price paid after each pattern, it would then be an easy matter a year afterward, provided his file were carefully preserved, to ascertain how much was paid for a certain pattern on an order.

The hectograph paste can be purchased from either the Frederick Post Company or the Felix Daus Dupli-cator Company, New York.

Patterns.

A number should be assigned to each stock pattern. A card should then be set up for each on which should be recorded the piece work price of the pattern. This will be a little trouble at first, but you will be amply repaid in the long run.

If an internal check is desired, a very good practice used in some foundries is to have two pattern rate cards, both of which must be signed by the foundry superintendent. One set of cards is retained by the cost clerk, and the other set by the bookkeeper. The cost clerk uses the rates on his cards to make his calculations for cost purposes, and the bookkeeper uses his set of cards to make his calculations for payroll. The aggregates of both must agree; thus each proves the other's work. This same practice may commendably be followed out for day work rates, and constitutes an efficient check on the accuracy of the payroll.

Materials in Foundries.

The first essential to any successful system of cost accounts is a stock account or inventory account. It is a fairly safe rule to follow that if a business will not allow reasonably accurate inventory accounts being kept, showing the monthly variations without a stock taking, the keeping of cost accounts is impracticable.

Inventory accounts should be kept in as much detail as the requirements demand. Aside from the necessity of keeping accurate inventory accounts for cost purposes, there are other powerful arguments which can be advanced in their favor. When such records are kept monthly balance sheets may be made. The purchasing agent is always advised as to the movement of materials—he knows when to order, thus minimizing the possibility of delays in the work owing to delayed deliveries. When employees know that such records are kept it means a reduction in shop waste, and last, but by no means least, is the check afforded on the use of materials.

A manufacturer will look with suspicion upon a discrepancy of 5 cents in his cash, yet have absolutely no knowledge as to whether his stock materials are being legitimately used. It may be argued that the proposition is an entirely different one; money leaves no trace behind it and is readily convertible. This must be admitted, but where you have one man who can steal money you have 100 who can pilfer commodities. The author does not wish to pose as a misanthrope, but experience teaches us that many men are deterred from wrongdoing less by their moral training than by the fear of detection.

If accurate costs are desired there must be accuracy in recording the items which go to make up the costs. Charging materials must be weighed, as must also the castings and scrap produced. Theoretically the order should be charged with the weight of the castings, salable and unsalable, including the scrap, at the established price of molten metal and credited with the weight of the scrap and unsalable castings at the value of scrap, but in practice this is not always feasible.

Heat Report, Exhibit No. 1.

Exhibit No. 1 is a sketch of a heat report along the lines of those used in some large foundries. Usually it is a pasteboard form. When the data required by this report are obtainable it is possible to keep cost accounts.

The price per pound used in extending the weights of the castings in the value column is obtained by dividing the combined cost of melting materials, fuels, fluxes, cupola labor and labor and material in repairs and maintenance of cupola by the weight of good and defective castings produced during the cost period. This price will change with the change in the prices of materials.

It is unnecessary to go deeply into the item of labor, because this is one item which, as a rule, is handled in more or less detail for payroll purposes.

Foundry labor may be divided into two general classes—namely, productive and nonproductive.

Productive labor is subdivided into two parts—namely, classified and auxiliary.

Classified labor is the labor which can be charged direct to a specific order number. It includes:

- Day work and piece work—molders and apprentices.
- Core makers.
- Cleaners and chippers.
- Flask makers.

Auxiliary labor is that labor which is productive in its nature, but cannot be charged direct to a specific order number. It includes:

- Superintendents.
- Timekeepers and weighers.
- Labor handling materials.
- Engineers and firemen.
- Sand blast operators.
- Tumbler labor.
- Gaters.
- Cupola labor.
- Scrap and cinder labor.
- Sand mixing.
- Inspection.

* A good method of including the auxiliary labor in the

* Read before the Philadelphia Foundrymen's Association, April 5.

classified labor is to prorate it according to the classified hours with the assistance of a Thatcher slide rule. This is an instrument which is indispensable for work of this character.

The term nonproductive labor needs no explanation.

Exhibit No. 2.

It will be observed that Exhibit No. 2 is nothing more than a mathematical demonstration. The purpose of the demonstration is to show the different results obtained by two methods of including the general expense—or load, as it is sometimes called—in the labor. The theory is to add to labor a certain arbitrary amount to cover the general expense, which amount is credited to an account against which all the general expense is charged. If your debit balance keeps increasing it shows you are not adding a sufficient amount to your labor, whereas, if your

It cannot be seriously contended that a man receiving \$5 per day requires more light, heat, real estate and more of the foreman's time than a man receiving \$3 per day. The \$5 man will usually require less of the foreman's time than the \$3 man. Hence it is wrong to charge to the order requiring the \$5 man a greater amount of the general expense than to the order requiring the \$3 man.

Exhibit No. 2 shows the different results obtained by the two methods. In the system of prorating the general expense over the wages paid the time of an apprentice is charged to the order at too low a figure and the time of a skilled molder at too high a figure. Therefore your labor records, in addition to showing the amount of money charged to an order, should also exhibit the number of hours worked thereon for the purpose of distributing the load in the form of an hourly burden.

It will, of course, involve additional trouble to do this

HEAT REPORT							
HEAT NO.							
DATE							
CHARGING MATERIALS AND PRODUCT		CASTINGS MADE					
	WEIGHT	ORDER NO.	PATTERN NO.	NO. PCS. MADE	DESCRIPTION	WEIGHT	VALUE
PIG IRON							
SCRAP							
TOTAL CHARGES							
GOOD CASTINGS							
DEFECTIVE CASTINGS							
GATES & SCRAP							
TOTAL PRODUCT							
LOSS							
COAL USED IN CUPOLA							
COKE " " "							

Exhibit No. 1.

credit balance increases it evidences an excessive burden being applied to the labor.

EXHIBIT NO. 2.

Hours.	Rate.	Amount of wages.	
2 ×	\$0.10	\$0.20	
3 ×	.15	.45	
4 ×	.20	.80	
5 ×	.25	1.25	
6 ×	.30	1.80	
Total 20		\$4.50	
General expense for period		\$4.50	
General expense per hour		.225	
<i>Wages Paid Basis.</i>			
Hours.	Rate.	Amount to order.	
2 ×	\$0.20	\$0.40	
3 ×	.30	.90	
4 ×	.40	1.60	
5 ×	.50	2.50	
6 ×	.60	3.60	
Total		\$9.00	
<i>Number of Hours Basis.</i>			
Hours.	Rate	Wages	Amount to order.
2 ×	\$0.225 + \$0.20		\$0.65
3 ×	.225 + .45		1.125
4 ×	.225 + .80		1.70
5 ×	.225 + 1.25		2.375
6 ×	.225 + 1.80		3.15
Total			\$9.00

The method in vogue in most manufactories is to add an arbitrary percentage to the amount of wages charged to an order. The other method is to establish an hourly burden, which is multiplied by the number of hours worked on the order.

in any case, but especially so in a foundry where molders are paid piece work. If you cannot be correct, be as nearly so as possible. If you cannot adopt the "hours worked basis," adopt the next best plan, "amount of wages basis."

It is a mistake to charge the general expense to an order according to the aggregate charges for labor and material on account of the fluctuations in the prices of materials.

General Expense.

By the term general expense is meant all expense incurred incident to production which cannot be directly assigned to an order number. It is not the purpose of this paper to dwell on those items of expense with which every one is familiar, such as auxiliary labor not absorbed in the classified labor; labor and material in repairs and maintenance; tools and supplies, including sands, power and light (electric); steam, and miscellaneous expenses, but it is the aim to discuss that item on which considerable ambiguity exists—namely:

Depreciation.

Lawrence R. Dicksee, the celebrated English accountant, defines depreciation as "A shrinkage in value, which in the ordinary course of events may be expected to take place as being a necessary consequence of the possession and enjoyment of the asset; it is consequently a charge against revenue."

Arthur Lowes Dickinson, in his paper on "The Profits of a Corporation," read at the Congress of Accountants, St. Louis, last summer, referred to depreciation as follows:

It would be beyond the scope of this paper to discuss what the different rates of depreciation on different classes of property should be, but it is necessary to emphasize the fact that however long the life of the buildings or plant, and however much may be spent year by year in the actual upkeep thereof, there must be a gradual depreciation in the value due either to direct wear and tear or to the necessity of replacing old and obsolete articles by new and up-to-date ones.

It is probable, however, that in any going concern which is maintained in an efficient condition there is a limit to the total amount of this depreciation as between original cost and present value; in fact, the theory that any piece of machinery continues in use until it reaches an absolute scrap value is not in accord with practical experience, taking any plant as a whole. When a plant is entirely new it may be properly considered as being worth its cost. It will never again attain this standard, because never again will the whole of it be absolutely new; on the other hand, it can never fall below a certain percentage of this standard without becoming so inefficient that it could not be operated at all. Between these limits, therefore, would seem to lie the total amount of depreciation to be provided out of earnings over a long period of years, assuming that all renewal expenditures tending to increase the life of the plant are charged against the depreciation so provided.

It is submitted that perhaps the most satisfactory way of making such provision is, in the first instance, to estimate the life of the different assets, assuming that ordinary recurring maintenance and renewal charges are provided out of profits as they occur, and to set aside each year the corresponding proportion of the original cost, crediting the same to a depreciation fund. From time to time expenditures which may be termed extraordinary renewals or periodical renewals will require to be made, which from their nature increase the original life of the plant. These should be charged against the fund provided. In this manner an equitable charge would be made against earnings each year to represent the amount of wear and tear that has accrued during the year.

In many cases, in place of a basis of life in years, one in tons operated will be found preferable, in which case the charge against profits would take the form of a rate per ton of production rather than a rate per year of life. There are other methods in force for properly providing for this wear and tear, but there is one method which it may safely be stated is an entirely erroneous one, and that is to set aside such sums as the directors may decide upon out of profits of each year upon no definite basis whatever.

The largest items of depreciation to be considered in connection with the foundry are depreciation of patterns, furnaces and flasks. The actual amount of estimated depreciation must obviously be governed by conditions. Wood patterns, core boxes and flasks of course depreciate much more rapidly than do brass or iron ones. It is claimed that 30 per cent. per annum does not any more than cover the depreciation of wood patterns.

The depreciation of an air furnace or a cupola, where the renewals thereto are currently charged to cost, must be decided by each foundryman for himself. It must be admitted, however, that there is a certain amount of depreciation even though the working efficiency is maintained, as Mr. Dickinson well says. This depreciation, whatever you may decide it to be, is certainly a factor in the cost and should be so handled. The item of furnace renewals is an extremely important one, and all such renewals should be charged to cost where they are not of such an extensive nature as to increase the capacity.

It is well to have an inventory of the plant items kept in such a way as to show depreciation deducted, as well as reduced cost in detail.

Miscellaneous Expenses.

The writer had not intended entering upon a dissertation on what items constitute miscellaneous expenses further than already indicated, but his attention has been called to a sentence in an article on this subject recently published on which it might not be amiss to comment. The sentence is as follows: "Other overhead expenses, such as losses through bad debts, also deserve consideration, and should be arranged for much in the same way as depreciation."

In a jobbing foundry this would be an immaterial error. Where, however, a stock of finished castings is carried on hand, and the bad debts are numerous, the error is a very material one; the result of which is the inflation of inventory values and the consequent misstatement of the profits available for dividend.

Depreciation is as much a factor in the cost of production as is the payment for labor and materials consumed. Bad debts, on the other hand, are certainly a charge against the credit or financial department, and have absolutely no bearing on the cost of production. Let us follow the idea to its logical conclusion. Suppose two

exactly similar plants are competitors on the same line of work. One of these plants has a poor credit manager and the other has a good credit manager. The cost of production in the plant which employs the poor credit manager will be higher than in the plant wherein the good credit manager is employed. The absurdity of the premise is self evident.

Foundries Wherein Costs Are Kept on All Orders.

In such foundries all materials charged into the cupola or air furnace must be weighed, as must also the castings and scrap produced. In other words, it is essential to secure the data required by Exhibit No. 1.

The first procedure is to open up a cost sheet or card for each order, which may be ruled to suit the requirements. It must, however, record the

Number of pieces made.
Weight per piece.
Total weight and value of metal.
Labor.
General expense or total hourly burden.
Total of all charges.

In the general ledger should be opened three accounts as follows:

Foundry burden account.
Uncompleted orders.
Completed orders.

The total charges to the cost sheets or cards must represent the total debit in uncompleted orders in the general ledger. When an order is finished the uncompleted orders account is credited and completed orders is debited.

Classified labor is charged direct to uncompleted orders, but the hourly burden applied thereto comes from the foundry burden account.

Foundry burden account is a balance account, which shows whether the price at which the metal is being charged to the orders is high enough, and also whether the established hourly burden is sufficient.

In the following list of the debits and credits to the foundry burden account it will be observed that certain symbols represent certain expenses. These symbols are permanent ones, and all expense of the nature indicated by the symbols should be charged thereto. When such records are maintained it is a simple matter to compute the cost per ton of product of the various expenses, and the management is thereby enabled to keep a closer watch on such expenses:

Foundry Burden Account.

Symbol.	DEBITS.	
	Description of expense.	Amount
	Charging materials:	
Pig Iron.....	.....	.....
Scrap .....	.....	.....
Limestone .....	.....	.....
	Total charging materials.....	.....
	Fuels, miscellaneous:	
For core ovens.....	.....	.....
For heating.....	.....	.....
	Total miscellaneous fuels.....	.....
	Expense, general:	
Power and light (electric).....	.....	.....
Steam .....	.....	.....
Depreciation .....	.....	.....
Miscellaneous expense.....	.....	.....
	Total general expense.....	.....
A	Productive labor:	
	1. Molders and apprentices (when not charged direct to orders).....	.....
	2. Core makers (when not charged direct to orders) .....	.....
	3. Cleaners and chippers (when not charged direct to orders).....	.....
	4. Flask makers (when not charged direct to orders) .....	.....
	5. Superintendents .....	.....
	6. Timekeepers and weighers.....	.....
	7. Labor handling materials.....	.....
	8. Engineers and firemen.....	.....
	9. Sand blast operators.....	.....
	10. Tumbler labor.....	.....
	11. Gaters .....	.....
	12. Cupola labor.....	.....
	13. Scrap and clinder labor.....	.....
	14. Sand mixing.....	.....
	15. Inspection .....	.....
	Total productive labor.....	.....

B	Repairs—Labor and material:		
	1. Cranes and appurtenances.....		
	2. Cupolas, fans and appurtenances.....		
	3. Core ovens and appurtenances.....		
	4. Scales		
	5. Annealing furnaces.....		
	6. Engines		
C	7. Flasks		
	Total repairs.....		
	Maintenance—Labor and material:		
	1. Yards, fences, sidewalks, &c.....		
D	2. Buildings and roofs.....		
	3. Tracks, track scales, trestles.....		
	Total maintenance.....		
	Tools and supplies:		
	1. Miscellaneous supplies.....		
	2. Molding sands, &c.....		
	Total tools and supplies.....		
These constitute total debits.....			
CREDITS.			
Pounds molten metal charged to uncompleted orders, at			
Pounds scrap produced, not charged direct to orders, at			
Aggregate hourly burden applied to classified labor....			
Total credits.....			

Balance.

In such an account it is readily perceptible whether or not the price at which the metal is charged to the order is high enough or too high, and whether the hourly burden is accurate. If you accumulate a credit balance it

COST OF PRODUCING CASTINGS				
	QUANTITY	PRICE	AMOUNT	COST PER TON
PIG IRON				
SCRAP				
TOTAL CHARGES				
MINUS SCRAP MADE				
NET CHARGES				
FUEL				
COAL				
COKE				
TOTAL FUEL				
PRODUCTIVE LABOR (CLASSIFIED & AUXILIARY)				
LABOR AND MATERIAL IN REPAIRS				
LABOR AND MATERIAL IN MAINTENANCE				
TOOLS AND SUPPLIES				
STEAM				
POWER AND LIGHT—ELECTRIC				
MISCELLANEOUS EXPENSES				
DEPRECIATION				
TOTAL COST ABOVE NET CHARGES				
GRAND TOTAL COST OF _____ TONS _____ CASTINGS				

Exhibit No. 3.

shows that your price of metal or your hourly burden, or both, are too high, and if your debit balance keeps increasing it evidences that either or both are not high enough.

Exhibit No. 3.

Exhibit No. 3 is a summary exhibit showing the cost per ton of product of the various items enumerated thereon.

Where Costs Are Kept on Each Particular Line of Product.

The plan just outlined would be applicable in this case, except that the detail is considerably diminished. Instead of recording costs on all the orders of each particular line of product, you only keep records of the aggre-

gate costs of all the orders of each line. A designating symbol should precede the regular order number evidencing to what class of product the order belongs. Suppose Order No. 500 C is assigned to jobbing work, then put the pattern in the sand as Order J 500 C. In this way it will not be difficult for the cost clerk to keep his records straight.

Where Costs Are Kept Only on New Patterns.

Where it is desired to keep costs on new patterns only the question resolves itself into a method of estimating. It would be unnecessary, in fact impossible, to keep the accounts of foundry burden account, uncompleted orders and completed orders.

There is one point, however, that I wish to lay particular stress upon, and that is that the labor account should represent classified labor only. Auxilliary labor, labor and material in repairs and maintenance, &c., should be charged to general expenses. Your records in addition to exhibiting the amount of classified labor during a specific period should also exhibit the number of classified hours which the amount represents. It is then a simple matter to establish your hourly burden by dividing the number of classified hours into the total amount of your general expenses. The sufficiency of the hourly burden should be frequently tested, as should also the accuracy of the established price of molten metal.

Where the method of keeping costs on all orders is in use the account completed orders embraces all the accounts which usually appear in the manufacturing section of the profit and loss account. Under the system of cost estimating, where the cost of an occasional order is arrived at by charging thereto the molten metal at the established cost, the classified labor, and the product of the hourly burden multiplied by the number of classified hours, and then crediting it with the weight of the unsalable castings and scrap at scrap value, the various accounts which make up the manufacturing section of the profit and loss account are not closed out currently, into a burden account, and, therefore, are carried in the usual way to the profit and loss account.

Cruiser Armor Resists Shells.—An interesting test took place April 5 at the naval proving ground at Indian Head, near Washington, in the presence of a large number of officers from the army and navy. A target structure, representing in all details a section of one of the armored cruisers of the Tennessee class, was attacked by shells fired from the 6-inch and 8-inch guns with the same striking velocities which these shells would have had if fired in service at ranges of 2700, 3000, 4000 and 4500 yards. Some of these shells were loaded with black powder and some with high explosive. The object of the test was to determine the resisting power of the ships to the different types of shells by which they would be attacked in action. The result was very satisfactory, indicating that these ships may be expected to stand up well against the guns of any ships to which they will naturally be opposed. At the end of the test the target, although considerably damaged locally, was intact so far as its structural elements were concerned.

The Youngstown Engineering Company, Youngstown, Ohio, has built an elevating apparatus on a plan similar to the construction of the Ferris wheel for use in a lead mine, and the idea is being applied for the first time. The wheel, which is 53 feet in diameter, has been shipped in 12 segments to Missouri, where it will be erected for the Federal Lead Company. It revolves on an axle 10 feet long and 10 inches in diameter. The wheel is known as a tailing elevator wheel and has 72 compartments, each of which is 30 x 22 inches. It is revolved by gear, and makes three revolutions a minute, taking in from a chute the lead and earth mixed with water and sifting out the lead as it revolves. The company has also recently completed a 5-ton electric crane for the plate shears of the Mahoning Valley plant of the Republic Iron & Steel Company. It has a 43-foot span. On the crane there is besides the electric brake an automatic safety brake which has been patented by the company.

The Fourforone Spark Plug.

The Fourforone spark plug is the name given to a four-point sparking plug made for automobiles or other gas or gasoline engines depending upon an electrical spark for ignition. From Fig. 1 it is seen that this plug provides four sparking points, and when the plug is set absolutely true all four points work simultaneously. The advantage of having four points instead of one is that no strain nor jar can throw more than one point out of contact, whereas with the ordinary spark device considerable inconvenience results from jolting, frequently putting the sparking device out of commission.

Fig. 1 is the central core or spindle, at the inner end of which are the four sparking points, formed by two pieces of small copper rod passed through the holes in the spindle. C is a perforated sleeve which screws on over the sparking end of the spindle. The explosions of combustion inside the engine blow air through these perforations, removing the dirt or dust which might

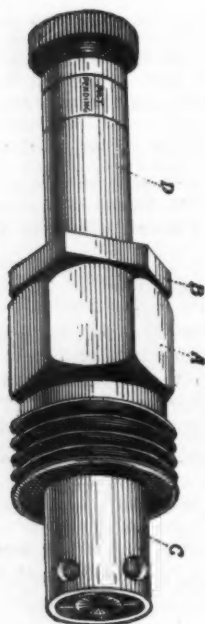


Fig. 1.

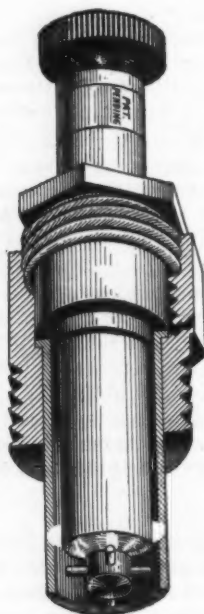


Fig. 2.

The Fourforone Spark Plug for Gas or Gasoline Engines.

otherwise accumulate on the sparking points. A is the large or main coupling, and B a nut or bushing fitting into it. The thread between A and C screws into a corresponding thread in the cylinder. Thus the plug can easily be removed from the engine, taken apart and cleaned and replaced. The main spindle is furnished either of mica or porcelain, and is provided with a shoulder, shown in Fig. 2, against which the flange of the removable sleeve is held when the screw is tightened. It is not necessary to pack and repack this device, as the mica spindle provides its own packing. This plug is made by the Fourforone Spark Plug Company, 23 Lake street, Chicago.

The Kinnear Pressed Radiator Company.

The business of the Kinnear-Hood Steel Company was established at Newark, N. J., some years ago, but the company has been recently reorganized, and is now known as the Kinnear Pressed Radiator Company. From its inception its business increased very rapidly, and much larger quarters were found necessary to take care of its increase in orders. The company expects to move its entire plant within a few weeks from Newark to West Pittsburgh, where it is erecting a new building, 90 x 700 feet, of structural steel, with sides made of artificial stone and complete in every detail. The building will be equipped with electric motors in all departments for the handling of pressed metal radiators, which will be the exclusive product.

The company will take out a Pennsylvania charter,

and a number of Pittsburgh parties are interested financially. The capital stock has been increased to \$400,000, all of which, we are advised, is fully paid up. The main office will be in the Bailey-Farrell Building, Pittsburgh, while an Eastern office will be maintained at 41 East Twenty-first street, New York City. Flattering offers were received to locate its new works at other places, but West Pittsburgh was decided upon, owing to the superior railroad facilities and other advantages offered by that place, which has five trunk lines running through it. The company expects to employ 200 men, with a capacity of 18,000 square feet of radiation per day. The officials are: H. W. Armstrong, president, formerly of the Solid Steel Tool & Forge Company; W. N. Murray, first vice-president; R. H. Kinnear, second vice-president and general sales manager; W. R. Kinnear, general manager, and R. R. Gordon, secretary and treasurer.

Recent Customs Decisions.

On April 3 General Appraiser Fischer handed down a decision as to the duty on so-called steel grinding plates and iron rollers imported by Thomas Prosser & Son, New York. They were assessed at 45 per cent. as manufactures of metal, but the importers claimed that the plates were dutiable at 1 3-10 cents a pound under the paragraph for steel in all forms and shapes not specially provided for, and that the rollers were dutiable either at 8-10 cent a pound as castings or 35 per cent. as forgings. Mr. Fischer sustains the claim as to the plates, but overrules it as to the rollers.

On April 4 Mr. Fischer handed down a decision overruling a protest by M. B. Carlin of Baltimore against the classification as manufactures of metal at 45 per cent. of slender needle like curved implements used in connection with an electric battery in depilatory processes. The importer claimed that they were dutiable as surgical needles at 25 per cent.

The Steel Strip Duty.

In spite of the fact that the United States Circuit Court of Appeals has decided against the contention of the Government that steel strips which have been brightened in the process of cold rolling are not subject to an additional duty of 1 cent a pound as polished steel, the Treasury Department, it was announced this week, has decided to reopen the issue and try it all over again. In other words, it is about to "make a new case," in customs parlance. The steel strips which are the subject of the controversy are used in the manufacture of car seat springs. The testimony at the trial of the suit, which was decided in favor of the importers, showed that before being cold rolled they were subjected to a preparatory pickling process in an acid bath, which left the surface bright. Judge Lacombe ruled that this pickling could not be regarded as a polishing process and that the brightening was merely incidental to the cold rolling process. It is said that the determination of the Treasury Department to reopen the case is due to the pressure of the domestic manufacturers of the same class of steel strips. They declare, it is alleged, that unless the extra duty of 1 cent a pound is imposed the imported strips will drive the domestic goods from the market. The Crucible Steel Company of America is one of the largest of the domestic producers. As a result of the determination of the Department to make a new case several hundred protests on the subject, which it was expected would have been released by the decision of the Court of Appeals, will have to remain undecided upon the suspended file of the Board of United States General Appraisers.

During March the Clairton steel plant of the Carnegie Steel Company, Clairton, Pa., broke the record for a plant of its size, producing 42,387 gross tons of ingots. This plant contains 12 50-ton open hearth furnaces and the average time of heats was a trifle over eight hours. The scrap consumption was low, averaging about 28 per cent., while the iron contained about 0.5 per cent. phosphorus and under 1 per cent. silicon. The iron used passed through the mixer from the Clairton furnaces.

National Machine Tool Builders' Association.

On Tuesday morning, April 11, the semiannual convention of the National Machine Tool Builders' Association opened at the Arlington Hotel, Washington, D. C. The meeting opened with a representative, though not a particularly large, number of the members of the organization on hand. One of the first transactions of the convention was to accept two new applications for membership and welcome the two new members into the association. They were the Bullard Machine Tool Company and the Bridgeport Foundry Company of Bridgeport, Conn. The following members were present:

William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.
 W. P. Davis, W. P. Davis Machine Company, Rochester, N. Y.
 P. E. Montanus, the Springfield Machine Tool Company, Springfield, Ohio.
 Enoch Earle, P. Blaisdell & Co., Worcester, Mass.
 L. M. Anderson, the Cincinnati Shaper Company, Cincinnati, Ohio.
 F. W. Boye, Jr., Schumacher & Boye, Cincinnati, Ohio.
 Chas. S. Gingrich, Cincinnati Milling Machine Company, Cincinnati, Ohio.
 Murray Shipley, the Dietz Machine Tool Company, Cincinnati, Ohio.
 Harry Hoefflinghoff, the Bickford Drill & Tool Company, Cincinnati, Ohio.
 J. B. Doan, American Tool Works Company, Cincinnati, Ohio.
 R. K. LeBlond, R. K. LeBlond Machine Tool Company, Cincinnati, Ohio.
 B. B. Quillan, Cincinnati Planer Company, Cincinnati, Ohio.
 H. L. Flather, Flather & Co., Incorporated, Nashua, N. H.
 Geo. O. Gridley, Windsor Machine Company, Windsor, Vt.
 Fred. L. Eberhardt, Gould & Eberhardt, Newark, N. J.
 C. H. Alvord, the Hendey Machine Company, Torrington, Conn.
 Edward M. Woodward, Woodward & Powell Planer Company, Worcester, Mass.
 V. F. Prentice, Prentice Bros. Company, Worcester, Mass.
 J. W. Carrei, Draper Machine Tool Company, Worcester, Mass.
 W. A. Wilson, Rochester, N. Y.
 O. M. Flather, Mark Flather Planer Company, Nashua, N. H.
 J. D. Detrick, Detrick & Harvey Machine Company, Baltimore, Md.
 E. P. Bullard, Jr., the Bullard Machine Tool Company, Bridgeport, Conn.

After the dispatch of the usual preliminary business, in which the officers of the association presented reports showing the organization to be in excellent condition as to finances, &c., the discussions scheduled for the meeting were begun by the reading of a paper on the "Conditions of Trade," by W. P. Davis of Rochester, N. Y.

Mr. Davis said:

Conditions of Trade.

The subject given me has such a wide range that there is no trouble to use the time allowed to speak of matters of vital interest to us all.

At our meeting in New York November 11, 1903, we considered the subject of "How Shall We Improve Trade?" Nearly two years have passed since that date, and if any one will take the time to look up the remarks made by the various members at the meeting he will find they have been verified by the condition and results. It was thought at that time by all familiar with the conditions that we must find a market for our machines outside of our own country, and we would have to work hard to hold trade we had secured abroad.

It is conceded that our machine tools are more accurate and convenient to operate than those made in Europe, and especially so the small machines, as lathes, drills and milling machines; but our foreign cousins are not slow to copy and manufacture machines that are most popular of American build, and the advantage they have in the saving of transportation and duty is a serious problem.

We have found a marked change in the orders received in the past year. The demand for large tools is comparatively light, while there is a fair call for the medium and small machines, as follows: Engine lathes from 10 to 18 inch swing, drills from 12 to 24 inch swing, shapers from 10 to 20 inch stroke, planers from 16 x 16 inch to 30 x 30 inch. And there is an excellent demand for new special machines, tools that will produce better work and lower the cost of production.

Machine tool builders throughout the country that are making a good class of tools and are well known have been well supplied with orders. Nearly all of the dealers claimed to have had the same volume of business in 1904 as in the preceding year, but the sales were made on a closer margin of profit, which was largely due to the fact that they were unloading a large surplus stock that they

had been carrying. Our foreign trade for the past year has remained about the same as in 1903, except for the large orders placed by Japan.

If we expect to get a reduction on the duties charged in any of the European countries we must expect to be more liberal in our own policy with them, as in some cases the duty imposed by the United States on machines shipped here is so unreasonable as to bring about retaliation on their part, as in the case of Russia, where the duty is so high that it practically excludes us from the sale of our products, while our German friends are so favored that they step in and take the trade, a large part of which would come to us were it not for the prohibitive tariff on our machines.

Many seem to think that, were the present war to close, we would not get the trade we have been securing, but in this we believe they are mistaken. When once this war is settled, there are bound to follow many years of prosperity never experienced in either country. They cannot produce the machinery as well as the material they will require, and if we put ourselves in a position to secure our share of the business we will secure a trade that will more than exceed our most sanguine expectations.

Wars, like failures in business, are hard and cruel teachers, but they often open up avenues that lead to great success and bring to notice possibilities previously overlooked, yet within easy reach. Our aim must be to secure foreign business, as our home market cannot use the amount of machinery we can produce. Russia and Japan are markets we need, and every obstacle must be removed to enable us to get our share of business in these two countries. While there may be a difference of opinion among Americans as to which of the two nations is in the right, all would be pleased to learn the war was over and peace had been restored.

Some may ask, What have we accomplished as an Association? I will answer by saying that we have accomplished many things, and will mention as one the position we took at our meeting Nov. 11, 1903, in regard to maintaining the prices and curtailing production.

The strong position we took at that time had much to do with the tiding over of a serious situation, which was not only a great help to the machine tool builders but many other manufacturers of machinery. The firm and decided stand we took was published by all the trade journals throughout the country and was read with interest by the public and favorably commented on by the press, and we know it was heartily indorsed by the machinery dealers. The result obtained by this one meeting has paid us well, and this is but one of the many results I could mention since the forming of the association.

All of the members are no doubt aware the supply and machinery dealers have formed an association known as the National Supply and Machinery Dealers' Association, the first meeting being called at Cleveland, February 15, 1905. Nearly 200 members have come into this association. A large part of this number handled our goods, and we all feel pleased to know of this organization, which already contains many of the most progressive dealers in machinery and supplies. Much good must follow in securing understanding between these members. No one can estimate the value of the information secured through meeting members of such an organization.

The fact that they have such a strong organization should give us an incentive to increase our own membership, that we may be better able to work to the mutual advantage of both organizations.

In conclusion I will say I hope to see more enthusiasm shown among the builders of machine tools, until we can number every machine tool builder as a member. And I shall be pleased to see the time when the National Machine Tool Builders' Association and the National Supply and Machinery Dealers' Association will hold their meetings on the same date and at the same place, as no one can estimate the value of a personal meeting between the two associations.

Our own association has done well, but not all we could wish. We must stand together and work for the one purpose, and that is to better the condition of the machine tool builders, and in so doing we will better the conditions of trade.

Discussion.

The reading of this paper was followed by an animated discussion in which almost all of the members participated. Mr. Davis touched upon several very timely points, and these were taken up by the members and deliberated upon at length.

The subject of "Advantages of the Motor Drive and Greater Power Necessity in the Belt Drive for Machine Tools" was linked with the topic "Standardization of Motor Drives," and the broad question of motor drives was discussed freely. Edward M. Woodward, Worcester, Mass., spoke of the work of the committee appointed at

the last convention to investigate the matter of standardization, telling of considerable progress made by the committee in the direction of accumulating the necessary facts in connection with the matter. The work of the committee was highly commended, and the members told of their own experiences in solving the motor drive problem, with the result that the committee was directed to continue its work until it had sifted the matter down sufficiently to permit the tabulation of its results. This is to be submitted in the shape of a report to the Executive Committee, which after finding it satisfactory will submit it to the members for final disposition by letter ballot. It is hoped that the matter will thus be disposed of before the next convention of the association. The objective point is to decide upon standard sizes of mountings, &c., which will meet with the approval of the various motor builders, and which will dovetail in with any similar work that may be carried on by any of the engineering societies. The committee is composed of Edward M. Woodward, chairman; Wm. Lodge, Fred Geier and C. J. Wetzel.

The subject of motor drives was dwelt upon very intelligently by G. H. Condict, vice-president and general manager of the Electro-Dynamic Company, Bayonne, N. J., who gave a most interesting talk upon what is now being done with the variable speed motor in relation to the operation of machine tools.

The subject of "Foundry Work and the Advantages of an Up to Date Foundry for Machine Tool Manufacturers" brought forth considerable debate. The matter was discussed informally, no paper on the subject being presented, and it was disposed of for the time being by the appointment of a committee consisting of W. P. Davis, B. B. Quillan and Wm. Lodge, which is to go into the matter thoroughly and report at the next convention.

Intense interest was manifested in the topic "The World's Markets," which was introduced in an informal manner. It was decided to appoint a committee consisting of Harry Hoefflinghoff, W. P. Davis and Murray Shipley to investigate what is being done in other countries in the way of training young men especially for the work of traveling into foreign countries to introduce machinery. It was suggested that young men of this country should be given a special course of training in this direction, which, in addition to learning of the customs and business and manufacturers' methods of other countries as well as their own, would include the learning of several languages, so that they could aid in the preparation of suitable trade literature and personally visit the countries whose business was sought.

"The Revision of the Apprenticeship Question" was a subject discussed, and it was the sense of the meeting that as the specialization in the manufacture of machine tools changed the relationship of the apprentice, the method of entering apprentices should be changed accordingly. To work out this problem a committee consisting of E. P. Bullard, Jr., and Chas. S. Gingrich was appointed.

The matter of "A Further Revision of the Prices of Detail Parts of Machine Tools" was left to the standard committees to be settled by them, and no action was taken by the convention concerning the subject of prices. These committees consist of the builders of the various types of machine tools, all the builders of shapers constituting one, those building lathes another, &c.

The Chicago Metal Trades Association will hold a meeting Friday evening, April 17, for the purpose of considering the project of becoming a branch of the National Metal Trades Association. This subject was fully developed during the recent meeting of the association in that city and is a move in the direction sought.

The steamer Elbert H. Gary, the largest craft on the great lakes, was launched April 8 at the yards of the Chicago Shipbuilding Company at South Chicago. The new boat is 569 feet long, has a beam of 56 feet, is 30 feet deep, and will have a carrying capacity of 10,000 tons. It will form part of the fleet of the Pittsburgh Steamship Company, a subsidiary of the United States Steel Corporation.

The Southern Merger.

The question of the consolidation of the leading coal and iron companies of the Birmingham and Sheffield districts has passed through a number of additional phases. It may be stated that the plans of the Hoadley party are discredited and have failed utterly, whatever their market position may be. Indeed, the serious interests deplore the intervention of the Hoadley party and believe that the merger, on conservative and safe lines, would have been far advanced now had it not been for the fact that extravagant bids for some of the properties were made merely to further a stock jobbing operation.

Important groups of capitalists, with John I. Blair & Co., bankers, of New York, at the head, supported by men who have been conspicuously successful in iron manufacture, and by the leading railroad interests centering in the Birmingham district, have been giving close study to a merger proposition, and the general features of it, from a financial point of view, have been outlined. Suffice it to say in the present chaotic condition of the matter that these include a proposition to put an additional \$25,000,000 of cash into the development of the properties.

An excellent basis for the valuation of three of the great companies—the Tennessee, Sloss-Sheffield and Republic—is the report of their mineral holdings made by an expert commission over a year since. These were supplemented by a close study of the physical condition of the properties and of the cost sheets of recent date, which hold out promises of considerable economies. The most important consideration, however, in favor of a merger along conservative lines is that under divided ownership the Southern properties have been handled to little advantage, considering the natural resources and the commanding geographical position which the Birmingham district enjoys. There has not only been keen and unreasonable competition, but there has entered into it a good deal of personal enmity.

The South is now entering upon a critical period from this point of view: The manufacture of steel from local raw materials is now established, both technically and commercially. The experience account has been a very heavy one, but the different interests in the Alabama producing regions now fully realize that the future lies in the conversion, locally, into finished products of the pig iron made. It is inevitable that within the next few years one or more great new steel plants will be built, and there is danger that the experience in pig iron manufacture will be repeated in the making and marketing of steel rolling mill products.

These are among the considerations which weigh with those who are now earnestly working on the merger plan along conservative lines. For the moment the whole project is in the air. Its progress is impeded by the usual extreme demands made by all those interested in individual properties. It may fail utterly, but so much progress has been made that the merits of the undertaking have been before serious men familiar with the resources of the South and able to finance a consolidation on a sound basis.

The American Smelters' Exploration Company, which was organized to take over the properties of the Guggenheim Exploration Company, and which is a subsidiary company of the American Smelting & Refining Company, has been organized with the following officers: President, E. W. Nash; vice-president, Barton Sewell; treasurer, Murray Guggenheim; secretary, Edward Brush; assistant treasurer, F. W. Hills; assistant secretary, W. W. Porter; auditor, Judd Stewart. The holdings of the Guggenheim Exploration Company have been transferred to the new company and active preparations are being made for extensive smelting operations.

Last week the Engineers' Society of Western Pennsylvania visited the Duquesne steel works and blast furnaces of the Carnegie Steel Company, at Duquesne, Pa., upon invitation of H. D. Williams, superintendent of these plants.

Edgar Thomson Furnace Records.

It will be recalled that on the occasion of the visit of the Iron and Steel Institute to Pittsburgh in November last the members were given some figures relative to the output of the four Duquesne blast furnaces of the Carnegie Steel Company at Duquesne, Pa., which in October last made 74,605 tons of pig iron of 2240 pounds and which constituted a world's record at that time for output of pig iron in one month by four stacks. This wonderful record has just been beaten by furnaces D, E, J and K at the Edgar Thomson plant of the same company, at Bessemer, Pa., these four stacks having made in March 77,242 tons of pig iron of 2240 pounds. We give below the daily output of the four furnaces in March, 1905, and of the four Duquesne furnaces in October, 1904, as follows:

Edgar Thomson Stacks.				Duquesne Stacks.			
Gross Tons.				Gross Tons.			
March	D	E	J	October	No. 1.	No. 2.	No. 3.
1...	541	407	572	712	1...	644	513
2...	521	448	485	602	2...	505	713
3...	501	466	594	658	3...	620	674
4...	500	587	677	626	4...	580	598
5...	670	617	527	615	5...	582	574
6...	647	526	700	600	6...	653	722
7...	567	502	591	559	7...	577	680
8...	514	537	739	729	8...	527	669
9...	674	519	561	642	9...	457	667
10...	534	538	579	692	10...	708	608
11...	572	538	530	603	11...	632	678
12...	552	508	593	614	12...	529	637
13...	618	485	548	568	13...	525	728
14...	446	593	668	648	14...	574	641
15...	648	518	551	671	15...	418	590
16...	576	564	676	740	16...	600	615
17...	471	569	669	753	17...	628	688
18...	491	586	553	529	18...	678	722
19...	621	525	699	705	19...	499	534
20...	493	536	651	748	20...	624	699
21...	602	607	806	625	21...	582	620
22...	552	678	728	804	22...	606	616
23...	633	700	711	725	23...	648	772
24...	746	622	896	743	24...	618	702
25...	606	595	598	734	25...	722	619
26...	510	687	712	624	26...	589	736
27...	757	674	795	832	27...	612	793
28...	539	582	784	785	28...	626	696
29...	473	546	640	820	29...	600	685
30...	656	687	743	918	30...	600	681
31...	751	698	668	647	31...	639	791

17,982 17,745 20,244 21,271 18,402 20,661 17,561 17,981

The Edgar Thomson stack K also has the daily record for an individual furnace, having turned out 918 tons of pig iron of 2240 pounds on March 30, which stands as a world's record for output in 24 hours. The total tonnage of merchantable product at the Edgar Thomson furnaces in March, 1905, was 133,620 tons, the four stacks noted above having made a total product of 77,242 tons, while the other seven stacks at this plant made 56,378 tons. The Edgar Thomson furnaces have beaten each Duquesne furnace individually, as a comparison will show that the best Edgar Thomson stack, which is K, had 21,271 tons in March, against Duquesne No. 2, which had 20,661 tons in October; J furnace had 20,244 tons against Duquesne No. 1, with 18,402 tons; D furnace had 17,982 tons against Duquesne No. 4, with 17,981 tons, and E had 17,745 tons against Duquesne No. 3, with 17,561 tons.

What is probably the most extensive dust collecting system on this continent is now in successful operation in the planing mill and cabinet shop of the Canadian Pacific Railway, at its Angus shops in Montreal. The system, which was designed and installed by C. H. Gifford & Co., managers of the Philadelphia branch of the B. F. Sturtevant Company, consists of 17 Sturtevant exhaust fans and six enormous dust collectors. The chips, shavings and sawdust are drawn from the machines and forced long distances to the collectors, whence they are in turn drawn to a secondary set of collectors and exhaust fans located above the boiler house. These fans rehandle the refuse and discharge it either direct to the boilers or, when the amount is excessive, to a shaving vault or to railroad cars by means of which it may be carried away. The economy of this modern method of handling wood working refuse is evident from the fact that enough is thus collected to operate 1700 horse-power of boilers.

The National Lead Company.

The National Lead Company, manufacturer of white lead, 100 William street, New York, has issued its annual report, showing the condition of the company as follows on December 31, 1904, as compared with the previous year:

Assets.		
	December 31, 1903.	December 31, 1904.
Plant investment...	\$24,143,298.55	\$24,133,521.95
Other investments...	618,150.00	893,723.82
Stock on hand...	5,910,486.48	6,307,951.58
Treasury stock...	190,600.00	190,600.00
Cash in bank...	150,104.52	396,215.84
Notes receivable...	174,088.53	154,750.20
Accounts receivable...	1,519,423.12	1,631,441.66
Totals.....	\$32,706,151.29	\$33,708,205.05

Liabilities.		
	December 31, 1903.	December 31, 1904.
Capital stock.....	\$30,000,000.00	\$30,000,000.00
Surplus.....	1,962,831.04	2,515,243.87
Mortgages.....	12,603.25	12,603.25
Notes payable.....	600,000.00	1,052,000.00
Accounts payable...	130,717.00	128,357.93
Totals.....	\$32,706,151.29	\$33,708,205.05

Surplus Account.		
	December 31, 1903.	December 31, 1904.
Surplus, December 31, 1903.....	\$1,962,831.04	\$1,962,831.04
Net earnings during 1904.....		1,595,692.83
Totals.....		\$3,558,523.87

Dividends Paid During 1904.		
Preferred stock:		
March 15, dividend No. 49.....	\$260,820.00	
June 15, dividend No. 50.....	260,820.00	
September 15, dividend No. 51.....	260,820.00	
December 15, dividend No. 52.....	260,820.00	
		1,043,280.00

Surplus, December 31, 1904.....	\$2,515,243.87
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President L. A. Cole says: "The foregoing statements exhibit the financial status of the company at the close of the thirteenth fiscal year, December 31, 1904. On an increased volume of business in every department of manufacture the results show net earnings of \$1,595,692.83. After payment of customary quarterly dividends on preferred stock, aggregating \$1,043,280, a remainder of \$552,412.83 is added to surplus, which at the close of the period under review amounts of \$2,515,243.87, and is actively and necessarily employed in carrying the large stocks of materials, raw and in process, essential to the regular conduct of the business. Inventories have been taken on a basis so conservative that adequate provision is made for fluctuations in the value of raw material. The plants of the company have been maintained at a cost of \$138,093.52 for ordinary repairs, and additions and enlargements made at an expense of \$197,809.42, both of which sums, aggregating \$335,902.94, have been charged to operating costs. We were never so well prepared for economical operation. Active and aggressive competition continues and will continue, but with old established brands, whose standard of excellence is not only maintained but constantly improved, we can reasonably look for expansion in the volume of business and continuance of profits. The constituent company conducting lead production completed a smelter in November which is now in profitable operation. That feature of the business is now self contained and provides a percentage of the raw material required. As opportunities are afforded it will be wise to enlarge and extend our operations of this character."

The World's Tin Mill Record.—The McKeesport Tin Plate Company, whose mills are located at Port Vue, McKeesport, Pa., has made a world's record for output and one that will probably stand for some time. In March this plant operated 730 eight-hour turns and made 2,671.63 gross tons of black plate, the average output per turn being 8,197.08 pounds. The average of the product rolled in March was 30.51 gauge. This is an extraordinary record for a ten-mill plant, and one that reflects great credit on the management. The McKeesport Tin Plate Company is one of the largest independent tin plate concerns in the country, and is operating its plant to its utmost capacity, having some heavy orders on its books. E. R. Crawford is president; E. W. Pitts, secretary and treasurer, and J. E. Lauck, mill manager.

THE IRON AGE

1855—1905.

New York, Thursday, April 13, 1905.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR.
EDWARD R. WILLIAMS,	- - - - -	HANDWRITER EDITOR.

Our Enormous Pig Iron Output.

Our statistics of pig iron production, which have just been collected for March, show that that month has broken all records. The output was so close to 2,000,000 gross tons that for general comment the round figures can be taken. These figures are likely to be exceeded in the ensuing spring months, as all conditions are at this season most favorable for heavy production. The only uncertain factor is that of transportation. The resumption of outdoor activity with the opening of spring always brings with it a heavy movement of miscellaneous freight. The railroad companies may be equal to the requirements of their increased traffic, but it would be by no means surprising if they should again experience a congestion of freight. That would of course interfere with the expeditious handling of coke and iron ore, now more than ever necessary because of the very great capacity of modern blast furnaces as well as their unparalleled activity. Our returns show that at the beginning of this month every blast furnace in the Pittsburgh district but one was in operation, the output in March having been 510,000 gross tons. This means the daily transportation of an immense tonnage of coke and iron ore in a limited territory, probably running in excess of 50,000 tons. The disarrangement of railroad service in the Pittsburgh district, if that should occur, would work serious inconvenience to blast furnace interests.

The attainment of a rate of nearly 24,000,000 tons a year in the production of pig iron marks an epoch in the industrial history of this country. Only four years ago the veteran statistician of the iron trade, James M. Swank, placed the total blast furnace capacity of this country at about those figures. His statement was of course largely in excess of the possible yield, as it included not only every blast furnace, but rated each furnace at its productive ability under continuously favorable conditions throughout the year, conditions which in practice could by no means be attained. It is therefore especially noteworthy that this year our actual output has reached a rate which equals the ideal capacity of all the blast furnaces of the country only four years ago. And the iron thus produced, although its quantity seems so huge as to cause fears that it is too large, is being consumed practically as fast as it runs out of the furnace, since the returns from the majority of merchant producers show a decline of 31,000 tons the past month. The steel companies have notoriously been running so full as to be bare of stocks, so that the actual consumption has been slightly over 2,000,000 tons in the month of March.

Unless there be interruptions during the months of April, May and June we may expect a product for the quarter very close to 6,000,000 tons, as compared with 5,400,000 tons for the first quarter, the production of charcoal pig iron being estimated in compiling both figures. These are huge totals which illustrate splendidly the present industrial activity of this country.

Industrial Stocks Restored to Favor.

The past five years have witnessed rapid changes in the sentiment of investors respecting industrial stocks. When the era of consolidations began in 1899-1900 speculation was rampant, and for a time such high prices ruled on industrial stocks that vast fortunes were realized by those who participated in launching the so-called trusts. Then followed a period of decline, largely due to the overproduction of industrial consolidations with their enormous issue of securities that were beyond the digestive capacity of the country. The decline was accelerated by the growth of hostility to trusts, causing a feeling of uneasiness among holders of their securities lest some effective method might develop by which the great consolidations would be declared illegal and be compelled to resolve themselves into their original units. Added to these influences came the depression in trade in 1903-1904, which caused earnings to decline, dividends to be reduced or passed, and in some instances brought about failures of underwriting projects with exposures of questionable methods of financing such schemes which brought all trusts into serious disrepute. Prices of all industrial stocks suffered from these unsettling factors affecting the public mind. The strong corporations did not escape from the fate which befell the weak ones. The stocks of those continuing to earn and pay dividends declined until only the reckless or the very shrewd cared to purchase them. So uncertain was the prospect that many holders of such stocks, who had bought them at high prices, became discouraged and realized as well as they could, losing heavily on their ventures.

Within the past six months another and more beneficial change has occurred. In many respects it is one of the most extraordinary ever known in the financial world. Rapid recoveries in stocks have often been seen before, but in such cases the stocks themselves had not been discredited, and the recovery was simply due to an improvement in general financial conditions. Now, however, we see the flouted industrials of the recent past making price records which in some cases are very far above the high mark reached when the companies were first organized. The temper of both the speculative and the investing public has undergone a complete transformation with respect to these stocks, especially those which continued to pay dividends during the depression of 1903-1904. But favor is not simply extended to such stocks, as those of companies which passed dividends but continued solvent have also risen to levels which seem fabulously high in the light of what has so recently occurred, while common stocks which have never paid dividends are seen attaining prices which indicate that expectations of such disbursements are strongly entertained. So complete has been the restoration of industrials to favor that astute financial editors who eyed them askance from their first appearance on stock exchanges are no longer expressing doubt as to their future, but are pointing out reasons why the trust stocks should be expected to prove profitable investments for those who have recently been acquiring them. This change in attitude has of course largely been brought about by the great improvement in general business conditions and the conviction that the new period of prosperity upon which the country has entered is not likely to be merely a brief reaction from the recent depression. It is also assumed that the industrials have had a sufficient seasoning in their five years' existence to warrant their classification among the permanent wealth producing factors of the country. It is to be hoped that their managers have learned such lessons from the severe experience of 1903-

1904 that ere another period of trade depression arrives every industrial corporation will have so strengthened its position financially that no doubt will be felt as to its ability to withstand such a strain.

The Winter Wheat Crop Indications.

A great deal of interest always attaches to the first spring report of the Department of Agriculture relative to the condition of the winter wheat crop. The report for this season, which was issued on Monday, confirms the impressions which have prevailed for the past month relative to the extremely favorable condition of the growing crop. This report shows the average condition of winter wheat on April 1 to have been 91.6, against 76.5 on April 1 of last year and 83.1 the mean of the April averages of the last ten years. It indicates an increase of 8.7 points above the condition reported in December, demonstrating that wheat has actually improved in condition instead of deteriorating, as usual. California stands best in the list with a condition of 100, Nebraska is next with 95, Michigan is third with 94, and Kansas, Texas, Indiana and Pennsylvania follow with 92. The lowest condition reported is in Oklahoma, and that stands at 88. So far as Kansas is concerned, which is one of the best winter wheat States, the prospect is now one which has seldom been surpassed at the time of the year, and soil conditions could scarcely be more favorable for the coming crop. The statistician of the New York Produce Exchange figures a crop indication of 479,787,000 bushels of winter wheat on the basis of the April report. His estimate based on the December figures was 448,600,000 bushels. This shows an increase in indications of over 31,000,000 bushels as compared with the condition of the crop at the beginning of winter. This is a most unusual result, as ordinarily the spring report shows a deterioration from the December indication. These figures are exceedingly important. They indicate that so far as the winter wheat crop is concerned no setback from the present condition of prosperity is at this time to be apprehended.

The English Trades Disputes Bill May Pass.

The Trades Disputes bill now before the British Parliament has become a decided source of worry to employers of labor because of the unexpected action of the House of Commons in referring it to a committee by a substantial majority. The provisions of the bill are so posterously in favor of the labor unions which instigated it that few had regarded it more seriously than as something to be carefully watched in the future as showing the temper of the British labor leaders. But now the House of Commons has given it respectful consideration.

This bill provides for three revolutionary changes in law, which the British Attorney-General characterizes as follows: "It is a measure to put trades unions above the law. The first clause, as I read it, would exempt them from the common law of nuisance; the second would exempt them from the common law of conspiracy, and the third would exempt them from the liability of action to which every other person in the United Kingdom is exposed." In other words, the bill would legalize picketing, would do away with all action for conspiracy, and would make the union wholly irresponsible for the acts of its officers and members, even when those acts were expressly authorized by the governing body of the union. With full knowledge that such special privileges as these are asked for, the House of Commons gives the bill the indorsement of a majority vote referring it to commit-

tee, when the sentiment of British employers is that it should have been killed in the very infancy of its presentation.

In Great Britain, as in America, employers have made the fight for liberty of action in the courts until the responsibility of the union and its members has been pretty well established. The result has been a great change for the better in the condition of nonunion labor, which they call "free labor" in England. The president of the National Free Labor Association of Great Britain makes the statement that during the eight years previous to the Taff Vale and other important decisions of the English courts, made in 1901, the association spent £285,000 to protect its members during strikes, and that during the same period five members were killed and 250 seriously injured. Since the courts established the procedure relating to interference during strikes, fixing responsibility for damages for nuisance and conspiracy, only £4000 has been spent to protect free labor men. The unions then found that they were liable under common law and desisted from violent measures of persuasion. Now they ask Parliament to amend the laws so that this responsibility will cease. It is said in explanation of the action of the House of Commons that members hesitated to throw out the bill summarily because of threats of opposition at the polls when they should again come up for election. Furthermore, it is believed that the bill will be either so materially amended as to lose all real force or will be killed later in its career. A British law such as that proposed would be an ugly precedent to be quoted on this side of the ocean.

Municipal Ownership in Chicago.

Last week's city elections in Chicago resulted in a plurality of 25,000 votes in favor of a candidate for Mayor whose campaign was fought on the one issue of immediate municipal ownership and operation of street railway lines. Further than that, similarly large majorities were cast, in the referendum vote, against both of two tentative propositions to make terms with existing street railway corporations, and finally against any proposition whatsoever looking to the granting of any franchise to any street railway corporation. It may be taken, therefore, as the sentiment of the Chicago voters that they favor municipal ownership and operation of the street railways. The state of mind that led to this remarkable decision was the result of the abuse of their privileges and the neglect of their opportunities by the existing street railway corporations. Already this vote is being cited as a forecast of what will happen to the gas companies, electric lighting companies and other public utility corporations in our great cities, and, ultimately, to the great steam and electric lines of the country.

Aside from the very debatable question as to how a city can purchase and operate such utilities successfully, there is the larger subject of the effect on the great American public of the habitual disregard of their rights, privileges and comforts that has seemingly been practiced by most of the great public service corporations. There is something wrong when the most largely purchased and eagerly read magazines are those containing articles directed against "soulless monopolies," and when a city like Chicago, otherwise ordinarily sane, should seek to plunge headlong into the dangerous experiment of municipal ownership and operation of its street car lines. Is there not in the Chicago election a note of warning to public service corporations throughout the country? If such a corporation has estranged its constituency by too strenuous an insistence upon its privileges, vested and

assumed, is it not the part of wisdom for it to seek to establish better relations of mutual understanding?

Skilled Mechanics Becoming Very Scarce.

With the return of each succeeding period of manufacturing activity the complaint becomes more general that it is difficult to secure first-class mechanics, especially machinists. The machine shops of the country are by no means rushed to the limit of their capacity, yet the cry is already raised that it is next to impossible to find really high-class workmen, whose services are necessary in order that the best results may be obtained in building the highest grades of machinery, and especially of machine tools. Moderately skillful men, who do the bulk of the work, are abundant, but the experts are scarcer and scarcer as the years go by. The result may be a more extended apprentice system. The unions, by restricting the number of apprentices wherever possible, have done a good deal to prevent the training of young men into thoroughly equipped experts. Another reason is that apprentices do not receive the same measure of attention and instruction from shop foremen as in the past. Many establishments pay little heed to this part of their shop management, and they are the sufferers thereby. There must be a change or the end of another decade will find the situation menacing the success of American machine shops. This fact has been already recognized in some shops. It is a question that all employers of expert mechanics should seriously consider.

American Steel in Colonial Times.

F. von A. Cabeen of Cabeen & Co., Betz Building, Philadelphia, in the course of researches in local historical matters, came across the following from the *Pennsylvania Chronicle* of October 23 and 30, 1769, which is interesting as one of the very first mentions made of the attempt to manufacture steel in this country:

"The Public may be informed (by us the subscribers) that we have made use of This Country Steel in various ways, some of which we found very good and a great deal otherwise, but upon a late trial of the Steel made by Humphries and Zane, we have used it for different work. Some of us have tried it in the very best of Edged Tools, and do find that it is equal, if not superior, to any imported from England. WITNESS OUR HANDS:

Adam Stricker, sen.	James Hendricks
Joseph Sermon	Daniel Otley
James Morrell	Isaac Berckingham
John Jervis, jun.	William Dawson
John Moody	Matthew Potter, jun.
Daniel Eveans	James Coffee
Robert Eastburn	

"Said steel is to be sold by Attmore and Peters at their store in Water Street, a few doors below Chestnut Street, where may be had Iron of the best quality well assorted either by wholesale or retail; also lamp and tanners oil, madder alum, copperas indigo, logwood, fustick brazeletto, brimstone, rozin, tar, raisins, starch and a general assortment of West India goods as usual."

Further Allis-Chalmers Removals.—The Allis-Chalmers Company announces that after April 15 its Chicago district offices, including the electrical department, will be located in the First National Bank building instead of the New York Life building. The office of the assistant treasurer has already been removed from Chicago to Milwaukee, and after May 1, as stated in *The Iron Age* of recent date, the general offices of the company will be removed to the Reliance Works, Milwaukee, from Chicago. This will include the headquarters of the vice-president and general manager, comptroller, assistant treasurer, office counsel, accounting and credit departments, and also managers of power, pumping engine, mining and crushing machinery, flour mill and saw mill departments.

CORRESPONDENCE.

The Nau Process for Refining Pig Iron.

To the Editor: The paper of J. B. Nau on a new process for refining pig iron, just published in *The Iron Age*, is a most valuable contribution to the metallurgy of iron and steel. It is one that should attract the attention not only of the iron and steel metallurgists in general but of the managers of steel works that have a supply of metal direct from the furnace. Mr. Nau treats the subject in a thorough manner, and backs up his statements by figures which are most conservative.

The refining of pig iron by the aid of rich ores, either hematite or magnetic, or roll scale, is as old as the art of puddling and was practiced as a preliminary step long before the advent of the Bessemer or open hearth process for making steel. The fact that the reaction of oxidizing silicon by oxygen derived from the reduction of iron ore is one which results in a surplus of heat is known to all metallurgists, and many attempts have been made, more or less successfully, to refine iron without the aid of supplying external heat. My own experiments, to which Mr. Nau refers, were based on the above metallurgical fact, and the results fully prove its practical possibility. Whether the method and apparatus which I employed would have proved commercially successful was never determined, and its practicability on a large scale may even be questioned. There was considerable difficulty encountered in forming and maintaining the ore ball, and its proper manipulation also required objectionable mechanical contrivances. On the other hand, the rapid rotation of the ore body in the molten metal greatly increases the efficiency of its surface, both by the friction and by the fact of bringing new particles of iron continually into contact with the oxide; at any rate, the reaction was very rapid and the metal was hotter and more fluid than before desiliconizing. The ladles poured perfectly clean.

The means for carrying out the refining process illustrated and described by Mr. Nau is very simple, and although no doubt some difficulties will be encountered there is no apparent reason why successful desiliconizing and some degree of dephosphorization should not be successfully attained in that way. One of the probable difficulties will be due to the great buoyancy of the iron bath, and it is not likely that the lower part of the cupola, as illustrated by Mr. Nau, will contain iron ore very much below the surface of the iron contained therein. Furthermore, it is possible that the ore above the iron may chill the slag to such an extent that it will not flow off. On the other hand, Mr. Nau supplies the means of preheating the ore to almost any degree desirable, which may quite overcome the latter difficulty mentioned.

Judging from my own experiments, in which the ore ball immersed in the liquid iron was of comparatively very low temperature, probably not over 300 degrees, I am convinced that the reaction will take place promptly when the molten iron comes into communication with the ore and that the reaction will be rapid and the oxidation of the silicon satisfactory.

Mr. Nau's process should especially interest the Southern steel makers, where the lean ores and high fuel consumption make it much more difficult to produce low silicon iron with low sulphur than in the North, where much richer ores are smelted.

The advantage of the refining of pig iron by the method under discussion over that by means of oxygen from the air in the Bessemer converter is fully brought out by Mr. Nau. It is worthy of further note, however, that the iron reduced by the silicon which is being refined will go a long way toward compensating for the extra fuel necessary to reduce the silicon from the ore. Since it costs more in fuel to make high silicon iron than low the question naturally arises, why not run the furnaces so as to produce low silicon iron at once and thus avoid the necessity of refining afterward, and this is the method generally carried on in the North. It is a well-known fact, however, that the metallurgical conditions of the blast furnaces which produce low silicon tend to produce high sulphur; consequently there is always danger of contamination by the latter element.

Due to the ore and coke conditions in the South, this is especially true of Southern pig iron, and there it can hardly be doubted that Mr. Nau's process would prove most valuable. But even in the North, where it is comparatively easy to make basic iron of acceptable quality, it is a question whether it would not be better to run the blast furnace directly through a Nau refining cupola before receiving it into the ladles for the steel works, or before going over the casting machine when the iron is destined for steel works at a distance.

ED. A. UEHLING.

NEW YORK, April 10, 1905.

Pittsburgh and Its Railroads.*

BY WILLIS L. KING, VICE-PRESIDENT AND GENERAL MANAGER
JONES & LAUGHLIN STEEL COMPANY.

When I was asked to speak to you to-night about Pittsburgh I felt most highly honored and gratified that the opportunity was made possible to say a word for my native city, and especially as I might speak as a manufacturer having at heart her greatest good to such a representative and great gathering of railroad men.

I am proud of Pittsburgh; her sturdy people, her thrift, her patriotism, her marvelous growth, and pre-eminence of manufacture must surely need no word of mine. From the time that our great Washington selected a site for a fort on this ground, about 150 years ago, Pittsburgh has been a haven for all those who desired an opportunity for a "square deal" in fighting the battle of life, and I feel assured that, as the centuries pass away, this may always be said with equal truth.

Pittsburgh Always Great.

Pittsburgh has always been great, even in her dirt. The earliest record I find of her claims for greatness is in the year 1784, while a village of 500 souls, and, remarkable as it may seem, covered three things—her great dirt, her great trade and her great freight rates. Arthur Lee of Virginia was sent out by the Government in 1784 as a commissioner to treat with the Indians, and stopped in Pittsburgh. He wrote a diary, from which I quote:

"Pittsburgh is inhabited almost entirely by Scots and Irish, who live in log houses and are as dirty as in the north of Ireland or even Scotland." This seems a little severe on the Scots and Irish, but shows that the dirt is no new thing. "There is a great deal of trade carried on, the goods being brought at the vast expense of 45 shillings per hundredweight from Philadelphia and Baltimore." Think of that, you makers of railway tariffs—\$220 per ton from Philadelphia to Pittsburgh! "They take in the shops money, wheat, flour and skins. There are in the town four attorneys, two doctors and not a priest of any persuasion nor church nor chapel. The rivers encroach fast on the town, and to such a degree that a gentleman told me the Allegheny had, within 30 years of his memory, carried away 100 yards." Major Seibert will tell you that this trouble has now been entirely obliterated. He concludes: "The place, I believe, will never be very considerable."

Of a certainty there is nothing new under the sun; for Pittsburgh's claims for greatness to-day do not differ, except in degree, from Mr. Lee's quaint account 120 years ago. While we must accept Mr. Lee's statement of fact, we cannot commend his judgment as to Pittsburgh's future greatness. Pittsburgh is very considerable. Situated at the junction of three great rivers and fertile valleys, her adjacent hills filled with coal, nature indeed was in a beneficent mood in the making of her. The hardy Scots and Irish, even if dirty, did the rest, and their thrift and energy have come down a precious legacy to their posterity.

In 1815—a borough of about 9000 inhabitants—I find mention of one small rolling mill making slit rails. This is apparently the pioneer rolling mill in Pittsburgh. In 1837, the population having increased to 43,000, the one small mill had increased to five rolling mills, produc-

ing about 15,000 tons of iron and nails annually and employing about 500 men.

Pittsburgh's Present Enormous Tonnage.

Not to weary you with statistics, I pass over the intervening 68 years to the present moment. Although during this interval her progress was always steady, the most marvelous growth in population, wealth and manufactures has occurred within the last 25 years. Our population to-day in the real greater Pittsburgh is about 800,000, and our yearly freight tonnage is over 86,000,000 tons. Does this not border on the supernatural? The little hamlet, in something more than a century, produces more tonnage than the combined shipping ports of London, New York, Antwerp, Hamburg, Hong Kong, and, I think, Liverpool may be thrown in for good measure. Surely this may justify our pride in the past and our hope for the future. I must confess my inability to grasp all that this means, but I know that it largely means shortage of cars and motive power and slow delivery.

The fortunes of the railroads and Pittsburgh are so closely interwoven that a community of interest in its best and broadest sense, offensive and defensive, should prevail under all conditions. Has this obtained in the past, and what part have the railroads had in the making of Pittsburgh? No small or mean part, I am glad to testify, and should I try to belittle it history would refute me and this great assembly disprove me. Yet it has been felt here for years that the railroads did not realize their power for good to Pittsburgh nor their ability to increase her importance and tonnage.

Many of us remember the opposition on the part of the older railroads to the entrance of the Pittsburgh & Lake Erie Railroad, and more lately the Bessemer & Lake Erie and the Wabash. Although unable to care for the tonnage, this short-sighted policy would have kept them out, in spite of the fact that every new railroad entering a manufacturing district favored by natural conditions not only makes business for itself but the others as well.

Railroads Assist Competitive Points.

Pittsburgh is the admitted metropolis of the world's steel industry, her tonnage being greater than the whole of Great Britain, but it is largely in the more unfinished forms. Have you ever asked yourselves why there are so few shops or factories to work up that rough steel into highly finished articles? We have no great agricultural works, no great engine builders, either stationary or locomotive; no famous tool making establishments for iron or wood, cotton or wool working; no automobile factories. New England and the great West have them. They should be here, where raw material and fuel are the cheapest. I think our railroads may fairly blame themselves for this. The Pittsburgh manufacturers have in the past also felt that they were not fairly treated in the matter of freight rates, and that the railroad policy inclined to assist competitive points, on the theory or belief that Pittsburgh could somehow take care of herself. I do not believe any such theory would obtain your support now; for we have many active and powerful competitors. Chicago, Cleveland and Buffalo, all situated on the Great Lakes, are quick to take advantage of their cheaper ore and your delay in movement of freight. Buyers are patient, but finally go to the nearest market. If your policy has been to build up these points you have succeeded.

Interstate Commerce Commissioner Prouty, in a recent speech, is reported to have said: "Since my acquaintance with the subject, the development of industry has forced the railroad; the railroad has not led the development of industry." This I believe is particularly true of Pittsburgh, and this is why you now find yourselves short of cars, motive power and terminals. If you are to do your full part in the future for commercial Pittsburgh you must reverse this policy. Should you determine now that railroad facilities shall always be in advance of manufacturing needs, I have no hesitation in predicting that her past growth, so marvelous as we know, will seem almost insignificant. This policy suggests the question of finance. No railroad can earn sufficient for extraordinary or even necessary improvements and extensions. In the past the ability to borrow has

* Address delivered at the annual dinner of the Traffic Club, Pittsburgh, April 7.

been intermittent, and this has undoubtedly had much to do with your habit of buying and making improvements only in good times; but the financial strength of this country, which not only supplies all legitimate needs of our own people but loans largely to foreign nations will, I believe, enable you to make a radical change in this policy. Your power to limit the duration and stress of dull times is beyond question. You are the largest purchasers of steel products in the world. In normal years you buy about 50 per cent. of the entire steel production. When the railroads and the general consumers buy at the same time a boom results, prices advance and deliveries are postponed.

The Unpreparedness of Railroads.

If your purchases could be distributed with even approximate uniformity during each year, instead of buying 10 to 15 per cent. one year and endeavoring to buy 60 to 70 per cent. the next, the comfort, the decreased cost and general results would be marvelous, alike to you and the steel producers. But whatever may be your policy in the future, the fact of your present unpreparedness is manifest. We have just emerged from a season of rest into a period of unusual and, I believe, long continued activity. The farmer plows and plants at a time when there is no other work to do. You should have learned of him and during the period of rest prepared for the activity to come with as much certainty as that harvest follows seed time.

The cry of car and motor shortage and delay in deliveries goes up from the shippers, and manufacturers who increased their capacity last year, and would still further add to their tonnage this year, fear for the fruition of their increasing investments. You have forced private capital to provide transfer, terminal and storage facilities. One company on the South Side is now spending millions in this direction, and doubtless its car ferries will soon connect the most distant parts of our manufacturing districts. You railroad farmers have not been weather wise. I can imagine I see Farmers Dixon and Bates with long handled scythes in their hands trying to reap the harvest in Pittsburgh, but the handles, alas! are not long enough to reach more than a portion of the grain. Farmer McCabe has loaded a fine big wagon of grain, but has lost a linchpin and cannot move it. Farmer Schoonmaker is swinging a cradle vigorously, but when he must sharpen the blade finds he has forgotten his whetstone. Farmer Wight's pitchfork is also too short; and so the rainstorm comes before the harvest is gathered.

But, indeed, the best evidence of Pittsburgh's greatness—industrially—can be found in this great gathering of railroad men to-night. I believe all the important systems are represented. You know where the freight is and come here to get it. I wish that each of your companies had its executive offices here, but presume that would be too much to ask even for Pittsburgh, and I would compromise by asking that executive powers might be conferred on the members of the Pittsburgh Traffic Club. This I know would remove all trouble about cars or motive power, for you would simply keep them here; and as for rates, Pittsburgh would be a law unto itself.

And this reminds me of the great reduction in freight rates in something more than a century. I have told you of the rate from Philadelphia in 1784. I think we will agree that a man who packed 100 pounds and did not get killed by the Indians was entitled to his 45 shillings per hundredweight. In 1837, 53 years later, hundreds of Conestoga wagons were crawling over the Alleghany Mountains and the freight dropped to \$50 per ton. The canal later reduced costs very materially, but it remained for the steam railroad to make it possible for Pittsburgh to ship and receive yearly \$6,000,000 tons of merchandise. The American railroads have the creditable record of making lower average freight rates than the railroads of any other country in the world, but whether these rates are yet entirely equitable, based on a proper regard for cost, dividends and surplus, I do not propose to argue to-night. I am in too hopeless a minority. Besides, the president has expressed a desire to hear the argument and he is not here to-night. It is certain, however, that the Pittsburgh manufacturers believe that a reduction, at

least on some classes of raw material, should be made, and they will hope to receive it.

I shall fail of my purpose to-night if I have not impressed you with the tremendous power of the railroads for the commercial and moral good of the country. You can change the steel industry from a prince or pauper into a prosperous American citizen. You are the largest commercial and industrial factor. You own \$12,000,000,000 of property, and employ and support millions of your fellows. You cannot control the crops nor prevent unwise legislation, but in the broad and wise conduct of your affairs you can prevent those sudden and violent fluctuations so marked in the past in this country, and bring about a stability in the consumption and a confidence in the future so essential for the prosperity of a nation.

Pittsburgh's Future.

The future of Pittsburgh is undoubtedly in your hands to make or mar. Should I tell you the tonnage of Pittsburgh in ten years, based on the relative increase in the last ten years, it would only make you incredulous. If the increase is only 50 per cent. nothing that you can do, I fear, will enable you to handle it. The railroad is the weakest link in Pittsburgh's greatness. She cannot increase materially without your active and persistent co-operation or (perhaps I should say and) the building of new roads. Capital will certainly be found to build new roads if you continue to lag behind the development of industry. As you are great, be broad in your plans for Pittsburgh. Sow confidently; the harvest will be plenteous.

In a recent speech before Congress General Grosvenor of Ohio said: "If there is one great industrial system in the United States greater than any other and more conducive to the best interest of the people of the United States than any other it is the railroads of the United States—vast in their scope, splendid in their construction, intelligent, wise and wonderful in the magnitude of their purposes." That is a true statement and a just tribute to those masters of transportation, many of whom have gone before, but whose work has much part in the upbuilding of the great and glorious country. Will such men fail to see the possibilities of Pittsburgh? I cannot believe it, and so with confidence look forward to that Greater Pittsburgh of which the present is but the foretaste.

Mexican Currency Reform.

DURANGO, April 3, 1905.—In furtherance of the plan for the reform of the currency, the principal features of which were given in *The Iron Age* of December 22, 1904, the Executive has issued a decree fixing May 1 as the time when the law will go into effect. The free coinage of silver will cease after April 16. It is decreed that from and after the date on which the law becomes operative, and save and except the case of recoinage, as provided by Article 14, new silver coins will only be struck and issued in exchange for gold coin or bullion at the rate of 75 cg. of pure gold per peso. The gold thus received may be employed in the purchase of silver bars on the scale necessary for the mintage of the silver coins applied for.

The creation of an exchange and reserve fund is provided for in articles reading as follows:

Article 27. There is created a fund of which the fundamental object is to facilitate the adaptation of the monetary circulation, as far as the quantity of coin is concerned, to the exigencies of stability in the rate of foreign exchange.

Article 28. The fund for the regulation of monetary circulation will be kept wholly separate from the other funds of the national exchequer and will be formed out of the following resources:

A. Ten million pesos, which, to start the fund, will be taken from the treasury reserves. This amount may be increased to 15,000,000 if the Department of Finance sees fit.

For several months, in fact, since immediately following the preliminary announcement of the Government's intention to provide the nation with a peso of fixed value, exchange rates have been normal and regular. The Government's action to make permanent by legislative edict this much desired condition will bring to an end for

all time the inconveniences and disadvantages which the nation has suffered on account of its unsatisfactory monetary system. An era of increased prosperity, following in the wake of larger investments of foreign capital in the Republic, may now be looked forward to with confidence.

Sale of Farming Implements.

Business throughout the country moves upon an even course, with more activity in wholesale lines in the capital. Sales of farming implements are reported to be fewer than at the same season a year ago. A better demand for tools of this class is expected as a result of the approaching rainy season and the excellent prospect for a large wheat crop. The Mexican farmer is very old fashioned and conservative in his methods. It is a difficult matter to induce him to abandon his antiquated wooden nosed plow. Still, some progress is being made in the distribution of improved implements and machinery for the cultivation of the land and the harvesting of crops. The *Mexican Herald* estimates the increase in the sales of agricultural implements in the Republic at 20 per cent. per year for the last decade. The same authority, speaking of the gradual substitution of the steel plow for the old Mexican makeshift and the adoption of labor saving implements upon the haciendas, remarks:

Only the walking plow is used to any extent in this country, as the pony plow is still rare enough in many isolated portions of the Republic to excite some wonder. On several large haciendas, within a small radius of the capital of the Republic, some riding plows are employed, but dealers say that the sale of these implements is not of any great volume, and little increase in this line is looked for during the next few years. There are some seed planters also sold in the country, but these are about as scarce on farms as the riding plow, so that the main thing that the dealers in agricultural implements have to depend upon for selling in large lots is the common walking plow. Of these plows the United States sells about nine-tenths of all that are used in Mexico, with Germany selling the other tenth. In the case of cultivators, however, which come second to that of plows in regard to the number of sales each year, the Germans place a considerable number in this country, but even in cultivators the United States leads all other countries in sales in Mexico.

The education of the native farmer, and more particularly of the Indian, in the matter of improved methods of soil cultivation is likely to be more rapid in future years. So many companies, colonies and individuals from abroad have taken up large bodies of land, and use the latest improved implements and machines, that their example can scarcely fail to prove an object lesson to the neighboring native farmers and induce many of them to adopt better methods.

J. J. D.

Labor Notes.

The Whitaker-Glessner Company, operating sheet and tin plate mills at Wheeling, W. Va., and Martins Ferry, Ohio, is attempting to run its Wheeling plant nonunion, and is getting men as fast as possible from outside districts. The Amalgamated Association has declared a strike at the plant and is trying to keep the men away. The company has gone into the courts and secured an injunction restraining the strikers from doing picket duty in the vicinity of the works and intimidating the men. The outlook is that the trouble will be prolonged for some time, but the company has definitely decided to operate its plants nonunion in the future and will carry out its policy.

Blast furnace operators in the Pittsburgh district, Mahoning and Shenango valleys and the Wheeling district have decided to advance blast furnace labor about 10 per cent., effective on May 1 next. There was some agitation among the men for an eight-hour day, but this has been dropped, and the men will receive an advance in wages instead.

The slate and tin roofers of Youngstown, Ohio, have presented a demand on the building contractors for an advance in wages, effective May 1. The contractors are favorable to an advance in wages, but will insist that the open shop clause be inserted in the wage agreement.

PERSONAL.

Willis L. King of the Jones & Laughlin Steel Company, Pittsburgh, who has been confined to his home for six weeks with a fractured limb, is again able to attend to business. Mr. King was one of the principal speakers at the Traffic Club dinner, held in Pittsburgh April 7.

W. P. Snyder of W. P. Snyder & Co. and the Shenango Furnace Company, Pittsburgh, has returned from an extended sojourn at Palm Beach, Fla.

Michael Killeen, for some years assistant superintendent of the Edgar Thomson blast furnace at Bessemer, Pa., has been appointed special assistant to Charles E. Dinkey, general superintendent of the plant. Mr. Killeen has just returned from a three months' sojourn in Florida.

The Pressed Steel Car Company, Pittsburgh, Pa., announces that J. W. Scull, assistant purchasing agent, will for the present assume the duties of E. E. Forgeus, resigned, retaining the title of assistant purchasing agent.

Edward B. Ellicott, chief electrician of the city of Chicago, is to resign his position to become assistant to Isham Randolph, chief engineer of the Sanitary District of Chicago. Mr. Ellicott will give special attention to the development of the hydro-electric work of the drainage canal.

Prof. Henry M. Howe, Columbia University, New York, has been elected "correspondent étranger" of the Society for the Encouragement of Industry of Paris, to succeed Sir Lowthian Bell. The other four living recipients of this honor are Messrs. Cannizzaro, an Italian chemist; Mendeleef of St. Petersburg, Solvay of Bruxelles and Sir Henry Roscoe of London. Three of these will be recognized as among the most illustrious living men of science.

C. C. Conkling, chief engineer of the Lackawanna Steel Company and the South Buffalo Railway Company, has resigned, retiring April 1. He will remain with the companies as consulting engineer and will open an office in Buffalo for the practice of his profession. Another important change in the staff of the Lackawanna Steel Company is in the office of the mechanical engineer. A. K. Hamilton now has charge of this office, and his assistant is Charles Boardman.

Wilbur L. Slack, for some years secretary of the Mesta Machine Company, Pittsburgh, has resigned to accept a position with the Real Estate Trust Company of Pittsburgh, as manager of its lot plans and manufacturing sites.

John S. Oursler, manager of the Shenango Works of the Carnegie Steel Company, New Castle, Pa., has been appointed manager of all the New Castle plants of the Carnegie Steel Company, and William H. Lewis, manager of the South Sharon steel plant of the same company, has been appointed general manager of all the Carnegie works in the Sharon district.

A. B. Scully, president of the Scully Steel & Iron Company, Chicago, is resting at Atlantic City, N. J., after his recent serious illness.

M. Cochran Armour, resident partner of Rogers, Brown & Co., Chicago, has returned after a five weeks' rest in Florida and Cuba.

W. A. Roome, manager of the Scully Steel & Iron Company, Chicago, has resigned to become assistant sales agent of A. M. Castle & Co., iron and steel jobbers, of the same city.

The Bray continuous sheet mill, installed at the works of the American Sheet & Tin Plate Company, at South Sharon, Pa., is being operated experimentally. It will be some time before any attempt is made to operate the plant in full, as the process has not yet reached the point where operations can be carried on to this extent.

The Inland Steel Company, Chicago, whose plant is at Indiana Harbor, Ind., has just ordered an equipment for a galvanizing plant in connection with its sheet mills, and expects to be able to furnish galvanized sheets early next month.

NEWS OF THE WORKS.

Iron and Steel.

As a result of the decision of the Youngstown Iron Sheet & Tube Company to build a Bessemer steel plant in East Youngstown, Ohio, it is probable a number of manufacturers will locate there to be near a constant source of supply of steel. A board of trade has been organized at Youngstown, and it is understood has taken up negotiations with a number of manufacturers with a view of having them locate in that city.

The Grand Crossing Tack Company, Chicago, is replacing the burned portion of its plant with a three-story factory, 216 x 70 x 96 feet. It is stated that the work is already a third done.

The Ashland Iron & Mining Company has bought sufficient of the capital stock in the Ashland Sheet Mill Company, Ashland, Ky., to control it, and the intention is to put the plant in operation on April 17. There will be no change in management.

The Bessemer department and sheet bar mill at the Columbus works of the Carnegie Steel Company, Columbus, Ohio, will be started up in a short time. Repairs have been under way which are about completed and the sheet bar mill is ready to operate.

The Carnegie Steel Company is preparing to start up the Girard and Warren plants, at Girard and Warren, Ohio. At the commencement of the hoop mill strike last summer the Carnegie Company operated the Girard plant for a time and then shut it down.

The Whitaker-Glessner Company of Wheeling, W. Va., is making good progress in the matter of operating its plant non-union. Two of the five hot mills are in operation this week and more mills will be started within a short time.

Moorehead Brother & Co., Incorporated, have shut down their mill at Pittsburgh, not on account of labor troubles, but because some repairs are necessary which will take a week or more to complete. This plant is operated nonunion, puddlers being paid on the basis of \$4.50 a ton. It is reported that the men ask for an advance in the puddling rate to bring it up to the Amalgamated scale rate, which is \$5.12, but this is denied by officers of the company.

The Schoen Steel Company, Pittsburgh, has received an order from the Brooklyn Rapid Transit Company for 2700 rolled steel car wheels. The contract is said to be the largest ever given for wheels for surface electric railway use.

Contracts have been awarded by the Carnegie Steel Company to the Riter-Conley Mfg. Company, Pittsburgh, for the construction of a modern blast furnace at Mingo Junction, to cost about \$1,000,000. Ground has already been broken for the new furnace, which will be rushed ahead for completion some time this fall. The new furnace will be 90 feet high and 22 feet in diameter at the bosh, and will have a capacity of 600 tons of pig iron per day. The furnace will be equipped with every modern improvement, automatic skip, 100-foot hot blast stoves and the latest and best furnace appliances. This is the first contract for a furnace awarded in the Pittsburgh district in the last two years.

The Greenville works of the Carnegie Steel Company, at Greenville, Pa., are being operated to practically full capacity. This plant was started nonunion and an effort was made by the old employees to prevent new men from going to work, but without avail. The output of the plant is skelp and small plates.

The Danville Bessemer Company, Danville, Pa., will offer at public sale on April 24 all the property of the company, including blast furnace, steel plant, open hearth furnace, shovel and handle factory, all ground, buildings, improvements, machinery, &c. Books describing the property can be had at the office of the company, 13 South Water street, Philadelphia.

The branch works which are being established at Hamilton, Ont., by the Union Drawn Steel Company, Beaver Falls, Pa., will be operated under the name of the Union Drawn Steel Company, Limited.

For the first time in years every blast furnace in Dauphin County, Pa., is in blast. The Pennsylvania Steel Company is running its four at Steelton and one at Harrisburg, and the Central Iron & Steel Company is running its two Paxton furnaces at Harrisburg.

The Danville rolling mill has been started after a period of idleness. Almost all of the iron works at Danville, Pa., are now at work.

The Susquehanna Iron & Steel Company has resumed work in its York rolling mill after a period of suspension for repairs and changes.

The Nittany Iron Company has posted a notice of increase in wages at its furnace at Bellefonte, Pa.

The Portage Iron Works, at Duncansville, Blair County, Pa., have been ordered to be put in readiness to start.

General Machinery.

The Hendrie & Bolthoff Mfg. & Supply Company, Denver, Col., has recently shipped a complete equipment of machinery to the Christmas Gift property of the Plata-Cobre Mining Company, near Casa Grande, Ariz. The order calls for a 40 horse-power boiler, 25 horse-power hoist, mine cars, buckets, rails, &c.

The Pinkham Construction Company is the name of a new firm which has opened a machine shop at 414 Atlantic avenue, Boston. The company will make a specialty of experimental work and do a general machine shop business. C. F. Pinkham is the head of the firm.

The United Iron Works Company, Springfield, Mo., has acquired the Cherryvale Iron Works, Cherryvale, Kan., and it is proposed to make a specialty of the manufacture of the Simpson dry press machine as well as other forms of brick machinery. The plant is located in the center of the gas belt and a large number of brick plants are tributary to it. The properties of the Cherryvale Iron Works include plants at Pittsburg, Iola and Cherryvale, which the United Iron Works Company now owns in addition to its Missouri holdings.

The Ashland Iron Works, Ashland, Ore., whose plant was recently partially destroyed by fire, has reorganized with a nominal capital of \$20,000 and has let contracts for a new building and machinery, the aggregate cost of which will be in the neighborhood of \$75,000. It is expected that the machinery will be installed next month.

The Bovee Grinder & Furnace Works, Waterloo, Iowa, whose plant was visited by fire some time ago, is preparing to rebuild on a larger scale, but the company will not be in the market for new machinery until next fall.

The Wabash Railroad Company has purchased 70 acres of land at Decatur, Ill., on which it will ultimately erect extensive shops. W. T. Newhall, chief engineer of the road, states that nothing in this direction will be done in the near future and that details have not yet been determined upon.

A receiver was appointed for the Johnson Forge Company, Wilmington, Del., by the United States Court on April 6. John B. Johnson of Philadelphia is president of the company, which has filed an answer to the action in which it admits that its liabilities exceed its assets.

The American Locomotive Company, which recently placed orders for about \$30,000 worth of machinery to be installed in the Rogers plant at Paterson, N. J., denies the statement that electric locomotives will be built at the Paterson plant, and declares that the added machinery will be used for the construction of steam locomotives.

The Commonwealth Motor Machine Company has been incorporated at Buffalo, N. Y., with a capital stock of \$200,000, to manufacture electric and gasoline motors and automatic machines. The directors are Charles F. Benzling, Charles F. Burkhardt and M. A. Benzling of Buffalo.

M. C. Lilly and Chris. Welge have formed a partnership and will open a machine shop in the Lewis Bennet Building in Maroa, Ill., for the manufacture of a car loader for loading grain from an elevator into a car; capacity, 50 bushels a minute. All heavy machinery has been purchased.

What is claimed to be the largest high-head centrifugal pump ever made in one unit was shipped to Oregon recently by the Byron-Jackson Machine Works, San Francisco, Cal. It was consigned to a large mining company in Oregon. The pump is of the series of five-step style, and is built to withstand a pressure of 250 pounds per square inch, or a total lift of 580 feet. It will supply 9000 gallons of water a minute. The pump is driven by four 400 horse-power turbine water wheels, direct connected.

The Dennison Foundry & Engineering Company has been incorporated at Dennison, Ohio, with a capital of \$85,000.

The City Council of Shelbyville, Ind., has decided to buy a steam roller for the streets.

The Practical Cement Block Company, recently organized at Indianapolis, Ind., and incorporated with \$30,000 capital stock, will be in the market for cement mixers, concrete post, shingle, railroad tie and building block machinery. W. H. Whitaker, Arthur E. Bradshaw and W. H. Jackson were the incorporators.

The Alliance Machine Company and the Morgan Engineering Company, both of Alliance, Ohio, last week placed orders with the Westinghouse Electric & Mfg. Company for a total of 120 crane motors, with an aggregate of 2000 horse-power. They vary in size from 1 to 100 horse-power. The Pennsylvania Railroad Company on the same day contracted for 20 induction motors to be added to its present motor equipment, and the Bethlehem Steel Company entered an order for direct current motors to be used in its mills. Numerous smaller orders would make up a list of applications which would cover the whole field of motor driven machines.

The National Twist Drill & Tool Company, Detroit, Mich., has increased its capital stock from \$20,000 to \$40,000 in order to provide larger facilities for taking care of business. The company was established about 18 months ago, and is now running night and day shifts to keep up with orders for drills, reamers, chucks and special tools.

The Crown Drilling Machine Company, Akron, Ohio, has increased its capital stock from \$100,000 to \$150,000. The company intends to push the manufacture of machinery it makes and for which it has a large demand. Officers have been elected as follows: A. B. Rinehart, president; William Wilkoff, vice-president; H. W. Cole, treasurer; George Wince, secretary.

Power Plant Equipment.

Three Westinghouse steam turbine and generator outfits have recently been ordered by the Public Service Corporation of New Jersey, one having an output of 500 kw. and two with ratings of 1000 kw. each. There is also a 1000-kw. Westinghouse turbo-generator building for the Indian Orchard Company, and a 400 horse-power induction motor with starting device and two 300-kw. transformers. Westinghouse, Church, Kerr & Co. are the designers and engineers for this station. The Truckee River General Electric Company, a large power distributing company of California operating many high potential lines, will add a 2000-kw. alternating current belt driven generator, four 750-kw. and four 625-kw. transformers to its present equipment.

An electric and cold storage plant will be erected in Lebanon, Ind., plans for which are in the hands of Cropsey & Lamm, architects, Cincinnati, Ohio.

At the annual meeting of the stockholders of the Pittsburgh Feed Water Heater Company the following officers were elected: James Bonar, president; J. E. Schlieper, treasurer, and Joseph Cawley, secretary. The company reports an active demand for its different types of heaters.

The Haberkorn Engine Company, Fort Wayne, Ind., has just closed an agreement with the Litchfield Foundry & Machine Company, Litchfield, Ill., whereby the latter company will use the Haberkorn cylinder and valve gear in the engines it builds, on a royalty basis.

Two heavy duty Reynolds-Corliss engines with 24-inch cylinders and a 42-inch stroke are being built at West Allis by the Allis-Chalmers Company for the Fred. W. Wolf Company. The Allis-Chalmers Company has received other orders as follows: Swift & Co., at Fort Worth, Texas, 600-kw. alternating current Bullock generator; Bethlehem Steel Company, South Bethlehem, Pa., heavy duty Reynolds-Corliss noncondensing engine with 30-inch cylinder and 48-inch stroke for direct connection with a 500-kw. generator; Mineral Point Zinc Company, Chicago, for its plant at Depue, Ill., two heavy duty cross compound Reynolds-Corliss engines, each with cylinders 21 and 42 inches in diameter with 48-inch stroke, two 100-kw. Bullock generators and 24 motors ranging in size from 10 to 75 horse-power; Mandel Bros., Chicago, engines and generators comprising five complete units, with an aggregate capacity of 1500 kw.; American Chicler Company, Chicago, a Reynolds-Corliss noncondensing engine of the Reliance type, with a 10-inch cylinder and 24-inch stroke; Thomas Molding Company, Chicago, for its factory at New Straitsville, Ohio, a Reynolds-Corliss horizontal noncondensing girder frame engine, 22 x 42 inches, with one 72 inches by 18 feet horizontal tubular boiler designed for 125 pounds working pressure, one 150 horse-power open heater, and one 6 x 4 x 6 inch duplex boiler feed pump, piston pattern.

The Harrisburg Foundry & Machine Works has taken an order for three 600 horse-power engines for one of the plants of the Barber Asphalt Company.

The Paxtang Electric Company, Harrisburg, Pa., will hold a meeting in June to vote on a proposed increase of capital stock from \$500,000 to \$1,000,000. Part of the increased capital is to be used to install 2000 additional horse-power. The officers of the company are C. W. Lynch, president; Robert C. Neal, secretary and treasurer; William M. Donaldson, Naudain Hamilton and Stanley Ray, directors. It was organized in 1902 and has been in operation about a year.

The Westinghouse Electric & Mfg. Company has secured numerous orders of late for steam turbine and turbo-generators, among which are the following: Eight turbine generators, mostly for 400 and 500 kw. units, with one 200-kw. and one 2500-kw. machine; United Electric Light & Power Company of New York, motor generator set consisting of 1400 horse-power induction motor and a 1000-kw. revolving field alternating current generator, with automatic regulating control outfit. The same day orders were received for 104 induction motors varying in size from ½ to 350 horse-power and aggregating 2200 horse-power capacity; Transit Development Company, Brooklyn, 204 Westinghouse railway motors; University of Illinois, a quadruple equipment of motors with two sets of unit switch control; Pittsburgh Reduction Company, two direct current generators each rated at 2200 kw. at 500 volts; the South Side Elevated Railway Company, Chicago, complete equipments for 70 cars, which includes 140 75 horse-power motors and multiple control apparatus; G. & O. Braniff & Co., agents for the Westinghouse Company in Mexico, 72 machines, ranging in output from ¼ to 30 horse-power; Philadelphia Rapid Transit Company, two 1500-kw., 13,200-volt turbine driven generators, and United Electric Light Company, Springfield, Mass., one 1000-kw. unit of the same type.

Bridges and Buildings.

The Milwaukee Bridge Company has prepared plans for the erection of a \$10,000 steel and brick addition to its plant at Thirty-fourth street and Auer avenue, Milwaukee, Wis.

Bids will be received to May 3 by the Board of Commissioners of Miami County, Ind., meeting at Peru, Ind., for the construction of a steel bridge over the Wabash River; estimated cost, \$40,000.

Chas. G. Sheely, Lincoln, Neb., has been awarded contract by the Commissioners of Lancaster County for the erection of a

number of bridges during the next 12 months. The contract aggregates about \$25,000.

All bids on a 140-foot steel bridge across the Des Moines River near Dakota, Iowa, have been rejected by the county. John Cunningham, Dakota, Iowa, is County Auditor.

The Chicago Bridge & Iron Works, Chicago, has commenced work on a steel railroad bridge at Danville, Ill., for the Chicago Southern Railway. The bridge is 1600 feet long and will require 1600 tons of structural steel. The Kinser Construction Company has the contract for the concrete abutments.

County Commissioners, Lafayette, Ind., will approve plans for a 125-foot steel bridge with concrete floor at their May meeting, following which bids will be called for. G. H. Stevenson is County Surveyor.

The City of Cedar Rapids, Iowa, has awarded to the Marsh Bridge Company, Des Moines, Iowa, contract for erecting a concrete-steel bridge across the east and west branches of the Cedar River at Second avenue, the consideration being \$82,100.

Clem S. Brineman, Auditor of Wells County, Bluffton, Ind., is asking for bids on 14 bridges, of which number one is to be a 129-foot span steel bridge, eleven are 14-foot span concrete-steel, one 12-foot and one 10-foot concrete-steel. Bids will close May 3.

Bids were opened by the Department of Bridges of New York on Monday for the construction of the University Heights bridge and the temporary terminal of the Brooklyn Bridge planned to relieve present congested conditions. Figures submitted on the first bid were not announced. The Snare & Friest Company submitted the lowest bid on the terminal work, the price being \$102,600.

Foundries.

The American Steel Foundries has announced that it will spend \$65,000 in improvements at its works at North Sharon, Pa. The cleaning department will be enlarged 140 feet, a new fuel system installed, and new cranes added.

M. J. Moorehouse, Fisher Building, Chicago, is actively engaged on plans for remodeling the old Ames & Frost bicycle sundry plant on Goose Island, which was purchased a few weeks ago by the Union Wire Mattress Company from the Pope Mfg. Company. A foundry building, 67 x 127 feet, is being added, and the present intention is to use machinery and equipment, including cupolas, from the old plant instead of purchasing new. This foundry will be for the manufacture of castings for beds.

At the annual meeting of the Galena Iron Works Company, Galena, Ill., held recently, E. W. Moore was elected secretary, succeeding F. H. Ives, and E. F. Mathey takes Mr. Ives' place as director. The other officers were re-elected, as follows: C. C. Mathey, president and treasurer; R. Barrett, vice-president. In addition to the officers above named and E. F. Mathey the Board of Directors is composed of David Sheen, C. W. McMillon and John Oldenberg. The company will not build a new plant at Platteville, Wis., as contemplated, having recently bought the plant of the Platteville Foundry & Machine Company, which will be operated in connection with the Galena plant.

The Damascus Bronze Company, Pittsburgh, with works on South avenue, Allegheny, Pa., recently added a new foundry to its plant, which will about double its capacity. Its business in Damascus nickel bronze has grown to such an extent that it was compelled to double its foundry capacity in order to take care of its increased trade.

The Finlay-Otten Foundry Company, Buffalo, N. Y., which recently filed a petition in involuntary bankruptcy, has made a settlement with its creditors and has reorganized to continue in business.

Sealed proposals will be received by the Quartermaster of the United States Army at West Point, N. Y., on May 5, for furnishing about 3000 tons of cast iron pipe and special castings.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, whose factory was recently visited by fire, has adjusted its loss and the work of repairing the damage has commenced and will be completed within the next three weeks.

The Fleetwood Foundry & Machine Company, whose plant at Fleetwood, Pa., was burned to the ground some time ago, will not rebuild and has decided to sell out and close up its business.

Fires.

An explosion in the dry cap house of the Union Metallic Cartridge Company, Bridgeport, Conn., April 5, caused damage to the extent of \$30,000.

A building at Concord, N. H., occupied by the Morrison Shoe Company and the Peerless Mfg. Company, manufacturers of women's underwear, was the scene of a serious fire April 8, with a loss of \$75,000.

The car and repair shops of the Toledo & Ohio Central Railroad were recently consumed by fire and a large number of railroad cars, besides considerable machinery, was destroyed.

Fire in the plant of the Bowler Foundry Company, Akron, Ohio, recently caused an estimated loss of \$5000.

The Sterling Steel Foundry Company's plant at Braddock, Pa., was visited by fire on April 6 and damage reported to amount to \$20,000 was done.

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The Iron and Metal Trades

A consumption of 2,000,000 tons of Pig Iron in the month of March is the extraordinary fact which is brought out by the monthly statistics collected by *The Iron Age*. As we show in detail elsewhere, the output of Coke and Anthracite Pig Iron during March was 1,936,000 tons. To this must be added about 34,000 tons of Charcoal Iron. Taking into account a reduction in the stocks of merchant furnaces of 30,000 tons, we have the magnificent total of 2,000,000 tons.

The enormous output, as contrasted with former months, is due largely to the record breaking in some of the great districts, like Pittsburgh with its 510,000 tons, the Shenango Valley with 155,000 tons, and the Illinois-Northwest group with its 253,000 tons. But, while such records may not be at once repeated, it is a general fact that we are now entering the months when everything conspires to lead to high records. The furnaces usually work best in April, May and June, and the handling of raw materials is not impeded.

The heavy production is reassuring. It holds out well justified hopes that we may avoid altogether the importation of foreign Iron and Steel on a large scale, which has been rather threatening of late. It tends to the stability of values, which all are earnestly interested in, and makes more remote the danger of a runaway market.

The enormous consumption is another reminder of the extraordinary industrial expansion of the country, with the Iron industry in the van, and justifies the unconquerable optimism of our people.

The event of the week in the Pig Iron markets has been the purchase of a large quantity of Foundry Iron, estimated variously from 50,000 to 75,000 tons, by the International Harvester Company, for delivery during the second half of the year, Northern and Southern furnaces participating.

In the East there has been further buying of Basic Pig, and Virginia furnaces have sold on the basis of \$15 at furnace to such widely remote points as St. Louis and New England.

There is a steady flow of moderate Rail orders, among recent sales being 13,000 tons to the St. Paul road. A Southwestern railroad is in the market for 25,000 tons, a Central Western system for 10,000 and two anthracite roads for 5000 and 15,000 tons, respectively.

The Plate market is in a congested condition. Contracts for two lake boats have just been placed and a third is under negotiation. Premiums over official prices are being demanded. There are large foreign inquiries in the market, but they of course cannot receive consideration.

Some very good tonnage has been placed in Structural Shapes, and there, too, scarcity for prompt delivery is a feature. Some figuring is going on for Foreign Beams, which, it is stated, can be laid down at about 1.55c. per lb. The Sheet, Tin Plate and Bar trades continue exceedingly active, and there have been indications of a renewed buying movement in Wire products, for which the export demand is very active. There has been some shading of prices in Tubular goods.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

At date, one week, one month and one year previous.

Apr. 12, Apr. 5, Mar. 15, Apr. 13,
1905. 1905. 1905. 1904.

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$17.50	\$17.50	\$17.50	\$15.00
Foundry Pig No. 2, Southern, Cincinnati	16.25	16.25	16.25	12.50
Foundry Pig No. 2, Local, Chicago	17.25	17.25	17.50	14.00
Bessemer Pig, Pittsburgh	16.35	16.35	16.35	14.35
Gray Forge, Pittsburgh	16.00	16.00	16.00	13.25
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	15.25

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	24.00	24.00	24.00	23.00
Steel Forging Billets, Pittsburgh	27.00	27.00	26.00	....
Steel Billets, Philadelphia	28.00	28.00	28.00	25.00
Steel Billets, Chicago	28.00	28.00	28.00	24.00
Wire Rods, Pittsburgh	34.00	34.00	33.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	15.25	15.25	14.50	11.50
O. Steel Rails, Philadelphia	18.00	18.00	18.00	15.00
O. Iron Rails, Chicago	20.00	20.00	20.00	17.00
O. Iron Rails, Philadelphia	25.00	25.00	24.50	18.50
O. Car Wheels, Chicago	16.00	16.00	15.75	14.00
O. Car Wheels, Philadelphia	17.00	17.00	17.00	13.50
Heavy Steel Scrap, Pittsburgh	16.25	16.00	16.00	13.75
Heavy Steel Scrap, Chicago	14.75	14.75	14.50	11.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.73½	1.73½	1.75	1.48½
Common Iron Bars, Chicago	1.60	1.60	1.60	1.50
Common Iron Bars, Pittsburgh	1.65	1.65	1.65	1.40
Steel Bars, Tidewater	1.64½	1.64½	1.64½	1.49½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.35
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.75½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.65	1.65	1.65	1.35
Skelp, Sheared Steel, Pittsburgh	1.70	1.70	1.70	1.35
Sheets, No. 27, Pittsburgh	2.30	2.30	2.20	2.15
Barb Wire, Pittsburgh	2.25	2.25	2.25	2.50
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.90
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.70

METALS:

Copper, New York	15.25	15.25	15.25	13.12½
Spelter, St. Louis	5.80	5.75	6.05	5.05
Lead, New York	4.50	4.50	4.45	4.50
Lead, St. Louis	4.47½	4.47½	4.37½	4.42½
Tin, New York	30.95	30.20	29.37½	27.87½
Antimony, Hallett, New York	8.25	8.25	7.87½	7.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, April 12, 1905.—(By Telegraph.)

The International Harvester Company, Chicago, has just placed orders for between 50,000 and 75,000 tons of Foundry Pig Iron for delivery the second half of the year. The manner in which this order was placed indicates that it is the belief of the Harvester Company that the prices will rule higher very shortly, for the purchase was made nearly 60 days earlier than usual and the deal was closed in a hurry, the whole matter being closed only a day or two after inquiries were first sent out. Various explanations are given for the purchase at this early date. A reasonable one is that the Harvester Company is melting a much larger tonnage than it had anticipated and wishes thus early to insure an ample supply for the second half of the year, in which period there is a possibility of a shortage. In Finished Iron and Steel products the predominating feature of the market is the fact that holders of contracts for Structural Steel, and in some cases for Plates and Bars, at the lower prices of last fall are compelled to buy from independent mills at present high prices in order to get satisfactory deliveries, and even to pay a premium above present prices. One large Eastern Plate producer has advanced his price on prompt orders about \$5 a ton and in some cases is getting the advancement. Premiums of \$3 to \$5 a ton above current prices are paid also for prompt execution of orders on Structural Materials. The leading makers of Bars, Pipe and Boiler Tubes are also many weeks behind their orders, giving the independents an opportunity of taking business at

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The Buffalo Tin Can Company will buy machinery in Chicago to replace that which was destroyed by fire recently. The company uses steam power and will repair the damage done to its plant as soon as possible.

The Iron and Metal Trades

A consumption of 2,000,000 tons of Pig Iron in the month of March is the extraordinary fact which is brought out by the monthly statistics collected by *The Iron Age*. As we show in detail elsewhere, the output of Coke and Anthracite Pig Iron during March was 1,936,000 tons. To this must be added about 34,000 tons of Charcoal Iron. Taking into account a reduction in the stocks of merchant furnaces of 30,000 tons, we have the magnificent total of 2,000,000 tons.

The enormous output, as contrasted with former months, is due largely to the record breaking in some of the great districts, like Pittsburgh with its 510,000 tons, the Shenango Valley with 155,000 tons, and the Illinois-Northwest group with its 253,000 tons. But, while such records may not be at once repeated, it is a general fact that we are now entering the months when everything conspires to lead to high records. The furnaces usually work best in April, May and June, and the handling of raw materials is not impeded.

The heavy production is reassuring. It holds out well justified hopes that we may avoid altogether the importation of foreign Iron and Steel on a large scale, which has been rather threatening of late. It tends to the stability of values, which all are earnestly interested in, and makes more remote the danger of a runaway market.

The enormous consumption is another reminder of the extraordinary industrial expansion of the country, with the Iron industry in the van, and justifies the unquarable optimism of our people.

The event of the week in the Pig Iron markets has been the purchase of a large quantity of Foundry Iron, estimated variously from 50,000 to 75,000 tons, by the International Harvester Company, for delivery during the second half of the year, Northern and Southern furnaces participating.

In the East there has been further buying of Basic Pig, and Virginia furnaces have sold on the basis of \$15 at furnace to such widely remote points as St. Louis and New England.

There is a steady flow of moderate Rail orders, among recent sales being 13,000 tons to the St. Paul road. A Southwestern railroad is in the market for 25,000 tons, a Central Western system for 10,000 and two anthracite roads for 5000 and 15,000 tons, respectively.

The Plate market is in a congested condition. Contracts for two lake boats have just been placed and a third is under negotiation. Premiums over official prices are being demanded. There are large foreign inquiries in the market, but they of course cannot receive consideration.

Some very good tonnage has been placed in Structural Shapes, and there, too, scarcity for prompt delivery is a feature. Some figuring is going on for Foreign Beams, which, it is stated, can be laid down at about 1.55c. per lb. The Sheet, Tin Plate and Bar trades continue exceedingly active, and there have been indications of a renewed buying movement in Wire products, for which the export demand is very active. There has been some shading of prices in Tubular goods.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

At date, one week, one month and one year previous.

Apr. 12, Apr. 5, Mar. 15, Apr. 13,
1905. 1905. 1905. 1904.

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$17.50	\$17.50	\$17.50	\$15.00
Foundry Pig No. 2, Southern, Cincinnati	16.25	16.25	16.25	12.50
Foundry Pig No. 2, Local, Chicago	17.25	17.25	17.50	14.00
Bessemer Pig, Pittsburgh	16.35	16.35	16.35	14.35
Gray Forge, Pittsburgh	16.00	16.00	16.00	13.25
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	15.25

BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh	24.00	24.00	24.00	23.00
Steel Forging Billets, Pittsburgh	27.00	27.00	26.00	....
Steel Billets, Philadelphia	28.00	28.00	28.00	25.00
Steel Billets, Chicago	28.00	28.00	28.00	24.00
Wire Rods, Pittsburgh	34.00	34.00	33.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	15.25	15.25	14.50	11.50
O. Steel Rails, Philadelphia	18.00	18.00	18.00	15.00
O. Iron Rails, Chicago	20.00	20.00	20.00	17.00
O. Iron Rails, Philadelphia	25.00	25.00	24.50	18.50
O. Car Wheels, Chicago	16.00	16.00	15.75	14.00
O. Car Wheels, Philadelphia	17.00	17.00	17.00	13.50
Heavy Steel Scrap, Pittsburgh	16.25	16.00	16.00	13.75
Heavy Steel Scrap, Chicago	14.75	14.75	14.50	11.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.73½	1.73½	1.75	1.48½
Common Iron Bars, Chicago	1.60	1.60	1.60	1.50
Common Iron Bars, Pittsburgh	1.65	1.65	1.65	1.40
Steel Bars, Tidewater	1.64½	1.64½	1.64½	1.49½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.35
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.75½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	1.65	1.65	1.65	1.35
Skelp, Sheared Steel, Pittsburgh	1.70	1.70	1.70	1.35
Sheets, No. 27, Pittsburgh	2.30	2.30	2.20	2.15
Barb Wire, Pittsburgh	2.25	2.25	2.25	2.50
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.90
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.70

METALS:

Copper, New York	15.25	15.25	15.25	13.12½
Spelter, St. Louis	5.80	5.75	6.05	5.05
Lead, New York	4.50	4.50	4.45	4.50
Lead, St. Louis	4.47½	4.47½	4.37½	4.42½
Tin, New York	30.95	30.20	29.37½	27.87½
Antimony, Hallett, New York	8.25	8.25	7.87½	7.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, April 12, 1905.—(By Telegraph.)

The International Harvester Company, Chicago, has just placed orders for between 50,000 and 75,000 tons of Foundry Pig Iron for delivery the second half of the year. The manner in which this order was placed indicates that it is the belief of the Harvester Company that the prices will rule higher very shortly, for the purchase was made nearly 60 days earlier than usual and the deal was closed in a hurry, the whole matter being closed only a day or two after inquiries were first sent out. Various explanations are given for the purchase at this early date. A reasonable one is that the Harvester Company is melting a much larger tonnage than it had anticipated and wishes thus early to insure an ample supply for the second half of the year, in which period there is a possibility of a shortage. In Finished Iron and Steel products the predominating feature of the market is the fact that holders of contracts for Structural Steel, and in some cases for Plates and Bars, at the lower prices of last fall are compelled to buy from independent mills at present high prices in order to get satisfactory deliveries, and even to pay a premium above present prices. One large Eastern Plate producer has advanced his price on prompt orders about \$5 a ton and in some cases is getting the advancement. Premiums of \$3 to \$5 a ton above current prices are paid also for prompt execution of orders on Structural Materials. The leading makers of Bars, Pipe and Boiler Tubes are also many weeks behind their orders, giving the independents an opportunity of taking business at

full market prices because they are not yet sufficiently congested to prevent prompt execution of orders.

Pig Iron.—The event of the week is the purchase by the International Harvester Company of between 50,000 and 75,000 tons of Pig Iron for delivery during the second half of 1905. Fifty thousand tons was placed with one large factor here, and it is divided between Northern and Southern Irons, the Northern predominating. The fact that the deal was closed within a day or two after inquiries were sent out and that the purchase was made almost 60 days earlier than is usual with the Harvester Company is taken to indicate the belief on the part of the officers of that company that Pig Iron will be higher in price before long. This was all Foundry Iron, as the Harvester Company operates two furnace stacks of its own at South Deering for the production of Bessemer Iron. The tonnage is to be distributed between the six plants of the Harvester Company at Auburn, N. Y.; Springfield, Ohio; Milwaukee and Chicago. Part of it was bought on analysis and part on fracture basis, and it is presumed that which is for the New York plant will be shipped from Buffalo furnaces. This is the only large deal that has been closed within the last few days, but there are other heavy melters who are sounding the market, and the action of the Harvester Company will tend to hasten conclusion of pending deals. Books of all producers of Northern and Southern Irons as far as can be learned are open for orders for delivery the third quarter and most of them will take business for the balance of 1905. Prices on Southern Iron have been strong in the sense that purchasers have not been able to break through the minimum base price of \$13.50, Birmingham, for No. 2, and many melters in districts not advantageously reached by competing furnaces have been compelled to pay \$13.75 to \$14. In the Chicago district Northern Irons have been selling without change for about two months at from \$17.25 to \$17.50, Chicago basis, and the percentage of business going at the higher prices seems to have increased recently. Blast furnaces in this district are all fully occupied and the demand for Irons is such that it would be impossible for them to accumulate stocks in their yards even if they desired to do so. Prices are unchanged except for Ohio Irons, which are offered a little freer in this market than they have been, leading to the elimination of the premium over association prices, plus freight, which had been quoted here for a little time. This leaves the schedule as follows:

Lake Superior Charcoal.....	\$18.50 to \$19.00
Northern Coke Foundry, No. 1.....	17.75 to 18.00
Northern Coke Foundry, No. 2.....	17.25 to 17.50
Northern Coke Foundry, No. 3.....	16.75 to 17.00
Northern Scotch, No. 1.....	18.00
Ohio Strong Softeners, No. 1.....	18.80 to 19.30
Ohio Strong Softeners, No. 2.....	18.30 to 18.80
Southern Silvery, 4 to 6 per cent. Silicon.....	18.65 to 19.65
Southern Coke, No. 1.....	17.65 to 17.90
Southern Coke, No. 2.....	17.15 to 17.40
Southern Coke, No. 3.....	16.65 to 16.90
Southern Coke, No. 4.....	16.40 to 16.65
Southern Coke, No. 1 Soft.....	17.65 to 17.90
Southern Coke, No. 2 Soft.....	17.15 to 17.40
Southern Gray Forge.....	16.50 to 16.75
Southern Mottled and White.....	15.90 to 16.15
Malleable Bessemer.....	17.50
Standard Bessemer.....	18.30 to 18.80
Jackson Co. and Ky. Silvery, 6 % Silicon.....	19.80
Jackson Co. and Ky. Silvery, 7 % Silicon.....	21.30
Jackson Co. and Ky. Silvery, 8 % Silicon.....	22.30
Jackson Co. and Ky. Silvery, 10 % Silicon.....	23.30
Alabama Basic.....	17.65
Virginia Basic.....	17.65

Billets.—Premiums of from \$2 to \$4 a ton above nominal pool prices are still charged, the selling prices of Billets in this market being as follows: Forging Billets, \$28 to \$30, base; Rolling Billets, \$26 to \$28; Sheet Bars, \$28 to \$30.

Rails and Track Supplies.—Several small orders for Standard Rails from this territory have gone to Pittsburgh, Johnstown and Buffalo mills. Prices on Rails and Track Supplies are unchanged, as follows: Standard Section Rails, \$28 per gross ton at maker's mill in 500-ton lots or greater, plus full freight to destination; Light Section Rails, \$24 to \$27 per gross ton, according to weight and tonnage; Angle Bars, 1.40c. to 1.50c.; Spikes, 1.70c. to 1.80c.; Track Bolts, 2.40c. to 2.50c., base, with Square Nuts, and 10c. to 15c. higher for Hexagon Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

Structural Materials.—Premiums of \$3 and \$5 a ton are being charged for prompt shipment of Structural Steel from mill. Store prices have not yet advanced officially, although premiums are charged for small and undesirable lots requiring considerable cutting to lengths. No large buildings have been closed during the week, although there are several large office and bank buildings that will soon be placed. Official prices for delivery from mill, f.o.b. Chicago, in car lots, are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¾-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to ex-

act lengths, punching, coping, bending or other shop work. Store prices for either random lengths or cut to lengths on Angles, Beams and Channels, base sizes, range from 2c. to 2.10c., with the usual extras for size.

Plates.—One large eastern Pennsylvania Plate mill while still quoting the official price on delayed delivery is asking and from some customers is receiving 2c. a lb., Chicago, for Plates to be shipped promptly from mill. This is looked upon as being a forerunner of a general condition of the Plate market. One by one the Plate mills of the country are becoming so filled with business that if the present demand continues they will soon be out of the market altogether for anything short of three to six months shipments. Official prices are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

Sheets.—Conditions are unchanged since last week's report and demand seems to be increasing rather than diminishing. A shortage in Galvanized Sheets is beginning to make itself manifest and mills are two or three months behind their orders. Light Box Annealed Sheets are not in as strong a condition as Galvanized, there being even to-day, in the light of the rush season, a larger mill capacity than the consuming trade could thus far take care of. However, the demand is growing and it looks as if the time is not far distant when all Sheet mills will be fully occupied. Official quotations, Chicago, are based on the following for base widths and lengths: Blue Annealed Sheets, Nos. 9 and 10, 1.91½c.; Box Annealed Sheets, Nos. 18 and 20, 2.31½c.; do., No. 27, 2.47½c.; do., No. 28, 2.56½c., with the customary differentials between gauges. Store prices are based on a minimum of 2.10c. for No. 10 Blue Annealed, 2.55c. for Nos. 18 and 20 Box Annealed, 2.70c. for No. 27 Box Annealed and 2.80c. for No. 28 Box Annealed. Galvanized Sheets are officially quoted at the following minimum prices at Chicago, in car lots from mill, base sizes: No. 10, 2.51½c.; Nos. 18 and 20, 2.86½c.; No. 27, 3.41½c.; No. 28, 3.51½c. Some mills ask 5c. and 10c. higher. Minimum store prices on Galvanized, base widths, are: Nos. 10, 12 and 14, 3.10c.; Nos. 22 and 24, 3.25c.; No. 27, 3.70c.; No. 28, 3.95c., with the usual differentials between gauges and extras for widths and lengths.

Bars.—Iron Bars in the sizes used by builders of freight cars are in excellent demand, which in some cases exceeds the ability of mills to supply. On the other hand, the sale of Light Bars is greatly curtailed by the percentage of large tonnages of Steel Bars, which are still available at less than the new 1.66½c., base, price. Iron Bars are quoted at about 1.60c., base, half extras, with special conditions leading to sales at higher and lower prices. Steel Bars are in active demand and there is an increasing tonnage of new business recently going to mills on the new 1.50c., Pittsburgh, basis. It is already rumored that this basis will be raised to 1.60c., the same as Plates and Structural Steel, before long, though no authentic information can be secured. Specifications on Hoop contracts are larger than has been expected and already there is a tendency to feel the market for contracts after July 1. Soft Steel Angles and other Shapes in the Bar class are firm at 1.76½c., half extras, in car lots. Hard Steel Bars, Angles and Shapes rolled from Old Rails are quoted at about \$2 a ton below the same goods in Soft Steel. Hoops are firm at their new price of 1.81½c., base, full extras, Chicago. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—Outside the fact that shafting discounts are not well maintained, the whole Merchant Steel situation is strong and prices are firm, as follows: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.23½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

Merchant Pipe.—There is very little price cutting in evidence in the Pipe market and mills are as a rule fully occupied, some of them being many weeks behind their orders. Large stocks in jobbers' hands are gradually melting away under a splendid consuming demand. Official prices, however, are unchanged, base sizes, ¾ to 6 inches being quoted in car lots, Chicago, at 73.85c. for Black Steel and

63.85c. for Galvanized Steel; 72.85c. for Black Iron and 62.35c. for Galvanized Iron, with the usual differentials for smaller and larger diameters and for X and XX strong.

Boiler Tubes.—The chronic famine of Locomotive Boiler Tubes is extending to Merchant Tubes as well, and mills are so far behind their orders that jobbers are doing an unusually heavy business from store. Prices are unchanged on car lots, Chicago, for base sizes, 2½ to 5 inches, at 64.35 for Steel, 53.35 for Iron and 52.85 for Seamless. Larger and smaller diameters take the usual extras in price, and less than car lots are quoted at two points less discount. Store prices at Chicago are unchanged and business is reported to be heavy, the greatly delayed deliveries of mills resulting in increased business. We quote from store:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	40	35	42½
1½ to 2½ inches.....	50	35	30
2½ inches.....	52½	35	37½
2½ to 5 inches.....	60	47½	42½
6 inches and larger.....	50	35	..

Cast Iron Pipe.—The South Park Commissioners are asking for bids on 2600 feet of 6-inch and 1500 feet of 4-inch Cast Iron Water Pipe and 10,000 pounds of Fittings. Duluth, Minn., and Portland, Ore., will each place 1000 tons this week, and Winnipeg, Man., 1700 tons of Water Pipe. Prices on ordinary lots at Chicago are as follows: \$29 a gross ton for 4-inch Pipe and \$28 for 6-inch and larger, with \$1 a ton higher for Gas Pipe.

Old Material.—The Chicago, Milwaukee & St. Paul, the Rock Island and the Frisco roads each sold small tonnages of Old Materials this week at prices that do not differ materially from those of the Illinois Central and Northwestern roads last week. Following are the range of prices quoted to large buyers on car lots and greater by railroads and by dealers:

Old Iron Rails.....	\$20.00 to \$20.50
Old Steel Rails, 4 feet and over.....	15.75 to 16.25
Old Steel Rails, less than 4 feet.....	15.25 to 15.50
Heavy Relaying Rails, subject to inspection	22.50 to 23.00
Heavy Relaying Rails, for side tracks.....	20.00 to 20.50
Old Car Wheels.....	16.00 to 16.50
Heavy Melting Steel Scrap.....	14.75 to 15.00
Frogs, Switches and Guards.....	14.50 to 15.00
Mixed Steel.....	12.50 to 13.00

The following quotations are per net ton:

Iron Fish Plates.....	\$17.50 to \$18.00
Iron Car Axles.....	22.25 to 22.50
Steel Car Axles.....	16.50 to 17.00
No. 1 Railroad Wrought.....	16.25 to 16.50
No. 2 Railroad Wrought.....	15.25 to 15.50
Shafting.....	16.50 to 17.00
No. 1 Dealers' Forge.....	12.50 to 13.00
Wrought Pipes and Flues.....	11.75 to 12.00
No. 1 Cut Bushing.....	11.25 to 11.50
Iron Axle Turnings.....	11.50 to 12.00
Soft Steel Axle Turnings.....	11.50 to 12.00
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	8.50 to 8.75
Mixed Borings, &c.....	8.50 to 8.75
No. 1 Mill.....	9.75 to 10.00
Country Sheet.....	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings.....	11.50 to 12.00
No. 1 Cast Scrap.....	14.50 to 15.00
Stove Plate and Light Cast Scrap.....	11.50 to 11.75
Railroad Malleable.....	13.75 to 14.00
Agricultural Malleable.....	12.25 to 12.50

Metals.—A fair business is being done, and prices are unchanged as follows: Copper is held at 15¼c. to 15½c. for Casting, and 15½c. to 15¾c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.45c., in car lots at 4.50c. and 5c. to 5¼c. in small lots; Pig Tin at 31c. to 31½c. in car lots and 31¼c. to 32¼c. in less than car lots. Spelter is in slow demand, the car lot price being 6c. and the small lot price 6¼c. Sheet Zinc is held at \$7.50, base, La Salle, equivalent, after deducting discounts, to \$7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at \$7.50 to \$8. Prices of Old Metals are as follows: Copper Wire, 13¼c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 12c.; Red Brass Borings, 10¾c.; Yellow Brass, Heavy, 9c.; Yellow Brass Borings, 7¾c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 3.85c.; Zinc, 4.35c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

Coke.—The record breaking production of Coke in the Connellsville regions and elsewhere has eased up the situation to such an extent that there is no longer any danger of shortage, but, on the contrary, the surplus of production over consumption of Foundry Coke has led to a weakening in prices, Connellsville Foundry ranging from \$2.75 to \$3, at the ovens, or \$5.40 to \$5.65, Chicago. Less favored Cokes sell at from \$5.15 to \$5.40.

The Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, launched April 8 the steamship Chipewa, building for the East Calcas Company, Limited, to ply between New York and the West Indies, for the Clyde Line. The vessel is 283 feet long, 40 feet beam and 29 feet 9 inches deep. Power will be supplied by triple expansion engine of 1200 indicated horse-power, while the contract speed is 14 knots. The launch was successful in every way.

Philadelphia.

FORREST BUILDING, April 11, 1905.

The Iron market has developed increased strength during the past week. There was a better demand for Basic, which was sold for delivery during the last quarter, and for Low Phosphorus for the second quarter, with additional inquiry for the latter for delivery during the last half of the year. Foundry Irons continue in steady demand, the individual sales being small, but the total tonnage aggregating very satisfactory figures. The market on the whole has maintained its full strength, quotations being very firm and unchanged, except for Low Phosphorus, which has slightly advanced. The same disposition which has characterized the market for some time, to maintain prices at about the present level, is being closely followed, and there is no difficulty in placing orders, particularly for Foundry grades, for deliveries during the balance of the year at ruling quotations. Spot Irons are likely to be held at a somewhat higher figure in the near future, but as nearly all buyers have anticipated their wants for the second, third and in many cases even the fourth quarter, it is hardly likely that any very great tonnage will be required for spot delivery. The market is well in hand and being firmly held, both buyers and sellers on the whole apparently satisfied with the existing conditions. The demand for Finished Material continues good; a large amount of business has been done by the Plate, Structural, Sheet and Bar mills, and, notwithstanding the fact that prices were reaffirmed at recent meetings of some of these associations, premiums are being asked and in many cases obtained for prompt deliveries. The mills are finding difficulty in keeping pace with the present rush of business, while the indications for a still greater demand in the near future is very promising.

Pig Iron.—There seems to be no diminution in the demand for Pig Iron, and while there is practically no change in prices, buyers feel no hesitancy in placing their probable requirements for the entire year. Basic has been in better demand, one lot of 7500 tons being sold at \$16.75, delivered, for the fourth quarter. A lot of 1000 tons of Low Phosphorus was sold at about \$20.80, delivered, for shipment during the second and third quarters, while a lot of 600 tons, for delivery during the second quarter, was sold at \$20, furnace, or close to \$21, delivered, in buyer's yard. There has been some little inquiry for Low Phosphorus Iron for the second half, but makers being fairly well sold up, are not anxious to sell too far ahead on this grade at to-day's quotations. Foundry Irons are being taken in good total volume, made up of a large number of sales of small lots ranging from a carload to several hundred tons each. Prices on these grades rule very firm, No. 2 X being sold at about an average price of \$17.75, according to quantity taken and the point of delivery. A lot of 5000 tons of Northern Iron was sold the Pipe foundries at close to \$17, delivered, and it is understood that it is quite likely additional tonnage will be required by those interests. Bessemer and Mill Irons have been particularly quiet, although it is not unlikely that there will be some early developments in the latter grade. While the production of Pig Iron is greater than ever before, consumption has been going on at an enormous rate, and many furnaces find it difficult to make deliveries as fast as buyers desire. The following would be about the range of prices for delivery in buyers' yards at local and nearby points, varying according to the point of delivery:

No. 1 X Foundry.....	\$18.25 to \$18.50
No. 2 X Foundry.....	17.75 to 18.00
No. 2 Plain.....	17.25 to 17.50
Standard Gray Forge.....	16.00 to 16.50
Ordinary Gray Forge.....	15.50 to 15.75
Basic.....	16.75 to 17.00
Low Phosphorus.....	20.50 to 21.00

Steel.—Is very firm and continues in good demand. The mills are well booked ahead and prompt deliveries command \$30, with extended deliveries ranging from \$28 to 29, High or Special Carbons varying from \$30 to \$34.

Ferromanganese.—There is a good demand, with slightly advanced prices. Sales have been made at \$50 for Western delivery, although \$48 to \$49 could probably be done for local or nearby delivery.

Muck Bars.—There is no change from the conditions of last week. There is but little demand at the time, makers asking \$28.75 to \$29.50, f.o.b. seller's mill. Low Phosphorus Bars are quoted at \$39 to \$40, but there is but little demand.

Plates.—There has been no let up in the demand for Plates. Consumers are anxious to get their contracts placed and mills have taken a large amount of new business. Orders are not confined to any one branch of the trade, but seem equally heavy from car and locomotive builders, shipyards, Boiler makers and miscellaneous customers. Specifications are coming out promptly, too much so for the mills, which are now running at top capacity and still unable to meet requirements. Delayed deliveries are therefore in order and to obtain prompt shipment of business placed at the time a premium would have to be paid. Meanwhile the following prices are quoted for Philadelphia and nearby deliveries:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide.....	1.73½	1.78½
Tank, Bridge and Boat Steel, rectangu- lar Plates, 14 inches wide and under.....	1.63½	1.68½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The fol- lowing extras apply: Per 100 pounds extra.		
3-16-inch thick.....	\$0.10	
Nos. 7 and 8, B. W. G.....	.15	
No. 9, B. W. G.....	.25	
Plates over 100 to 110 inches.....	.05	
Plates over 110 to 115 inches.....	.10	
Plates over 115 to 120 inches.....	.15	
Plates over 120 to 125 inches.....	.25	
Plates over 125 to 130 inches.....	.50	
Plates over 130 inches.....	1.00	

Structural Material.—The tonnage offered the Structural mills continues to increase and a large amount of business has been placed on their books. Prompt deliveries are hard to get, the mills being operated to their full capacity to take care of the business previously placed. New business for prompt delivery commands a premium. Meanwhile prices continue to be quoted as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.65c. to 1.68c.

Bars.—Conditions continue unchanged; there is a heavy demand and mills as a rule are unable to make prompt shipments. Prices at which orders are accepted are about as follows: Best Bar Iron, 1.73½c. to 1.80c., delivered; Steel Bars, 1.63½c. to 1.70c., the outside figure being demanded for prompt deliveries.

Sheets.—A large amount of business continues being taken. Buyers are increasing in number and are taking good quantities of Sheets. Deliveries are hard to get promptly, as the mills have more business than they can satisfactorily handle. Prices are very firm, ordinary Sheets being quoted as follows: 18 to 20 gauge, 2.40c.; 22 to 24 gauge, 2.50c.; 25 and 26 gauge, 2.60c.; 27 gauge, 2.70c., and 28 gauge, 2.80c. Best grades are two to three tenths higher.

Old Material.—The market for some grades of Old Material is decidedly weaker. Steel mills have taken quite a large tonnage of No. 1 Steel Scrap, made up mostly of small lots, at from \$17.50 to \$17.75, delivered, and one round lot of several thousand tons was turned close to the same figures. Sellers as a rule, however, continue to hold for materially higher prices. Bids and offers for deliveries in buyers' yards are about as follows, sales being largely at the medium or higher figures:

Old Steel Rails.....	\$18.00 to \$18.50
No. 1 Steel Scrap.....	17.50 to 17.75
Old Steel Axles.....	22.50 to 23.50
Old Iron Axles.....	26.50 to 28.00
Old Iron Rails.....	25.00 to 26.00
Old Car Wheels.....	17.00 to 17.50
Choice Scrap, R. R. No. 1 Wrought.....	23.00 to 23.50
No. 1 Yard Scrap.....	20.50 to 21.00
Machinery Scrap.....	16.00 to 16.50
Low Phosphorus Scrap.....	22.00 to 23.00
Wrought Iron Pipe.....	16.25 to 16.75
No. 1 Forge Fire Scrap.....	16.50 to 17.00
No. 2 Forge Fire Scrap, Ordinary.....	13.00 to 13.50
Wrought Turnings.....	14.75 to 15.25
Axle Turnings, Choice Heavy.....	16.00 to 16.50
Cast Borings.....	11.50 to 11.75
Stove Plates.....	13.00 to 13.50

N. S. Bartlett & Co., Pig Iron and Coke merchants, Boston, Mass., have opened a Philadelphia office at 1111 Harrison Building. Francis E. Weston, who for many years was connected with the manufacture and sale of Pig Iron with the Crozer Iron Company, Roanoke, Va., will represent them in that territory.

Pittsburgh.

PARK BUILDING, April 12, 1905.—(By Telegraph.)

Pig Iron.—While inquiries for Pig Iron are light the market is firm, and it seems that the enormous production of Pig Iron is going into actual consumption as fast as made. Small lots of speculative Iron that have been hanging over the market for some time have been pretty well cleaned up and the tone of the market, especially on Foundry and Forge, seems to be firmer. Bessemer and Basic Iron are firm at \$15.50, Valley furnace, but it is possible some small lots held by dealers might be picked up on the basis of \$15.40, at furnace. Northern No. 2 Foundry is \$16 at furnace or \$16.85, Pittsburgh, but on a firm offer and for good sized tonnage some furnaces would probably shade this price from 15c. to 25c. a ton. There is some inquiry for Forge Iron, and Northern makes are held at \$15 to \$15.15, Valley furnace, or \$15.85 to \$16, Pittsburgh. We note a sale of 500 tons to a local consumer at the first named price.

Steel.—The mills do not seem to be catching up to any

extent on deliveries of Steel and are still from three to four weeks behind. Bessemer and Open Hearth Billets, for reasonably prompt delivery, command about \$24 a ton, maker's mill, while Sheet and Tin Bars in random lengths are \$26.50, and Cut Bars are \$27, maker's mill, for prompt shipment. We note a sale of 1000 to 1200 tons of Cut Sheet Bars for Eastern shipment on the basis of \$27, maker's mill.

Coke.—The Westinghouse Electric & Mfg. Company has bought a very large tonnage of Foundry Coke, amounting to about 700 cars, for delivery to its foundries at East Pittsburgh, Allegheny, Pa., and Cleveland, Ohio. It is understood that a relatively low price was made on this business.

Muck Bar.—There is more inquiry for Muck Bar than for some time and we note a sale of 1200 tons of neutral Bar made from all Pig Iron at \$28.25, delivered buyer's mill, Pittsburgh.

Light Rails.—We are advised that the Cambria Steel Company is out of the market as a seller of Light Rails, while the Carnegie Steel Company is not promising deliveries inside of three months. Under these conditions prices have naturally advanced and 16, 20 and 25 lb. sections are held at about \$28 and 30, 35 and 40 lb. sections at about \$25, maker's mill.

(By Mail.)

The March report issued by J. G. Butler, Jr., of the Bessemer Pig Iron Association shows that on April 1, out of 193 furnaces using Lake Superior Ore reporting to the association, 173 were in blast, making 92 per cent. of the capacity in operation. The report shows that the United States Steel Corporation has 95 per cent. of its furnace capacity active, but it is doubtful whether it can maintain definitely this enormous output. It is said that a number of stacks owned by constituent companies are badly in need of repairs and would have been shut down before this had it not been for the heavy requirements of Pig Iron needed.

But little tonnage in Pig Iron has been sold in the past week, but the market is extremely firm on the basis of \$15.50 at furnace for Bessemer and Basic Iron, about \$16 for Northern No. 2 Foundry and \$15 to \$15.15 at furnace for Northern Forge. Leading consumers of Pig Iron are pretty well covered, furnaces are well sold up and there is not likely to be much tonnage moving for the next two or three weeks. The Steel Corporation is not likely to buy any more Iron for April delivery, but is expected to come in the market for a round tonnage of May Iron.

Some idea of the activity in the Steel market may be gathered when the statement is made that Cut Sheet Bars for prompt delivery have sold at \$27, maker's mill. A sale of about 1000 tons has been made at this price, which is \$3.50 a ton over the official price. Most of the independent Sheet and Tin Plate mills are covered with contracts for Bars at the official price of \$23 for random lengths and \$23.50 for Cut Bars, but most makers are three to four weeks behind in delivery, and in such cases consumers have to go out and get Bars wherever they can and pay whatever prices sellers ask.

The tonnage in Finished Iron and Steel continues heavy on nearly all lines, with the exception of Nails and Wire and Tubular goods. Plates are in especially heavy demand and Structural Steel is also much better. There have been no changes in prices since our last report.

Ferromanganese.—The movement in Ferro continues heavy and prices have advanced squarely to \$50 and \$51 a ton, delivered. Sales of 1000 tons or more of English 80 per cent. Ferro are reported at these prices. The Carnegie Steel Company is filling old contracts for Ferro that are on its books, but is not taking on any new business.

Rods.—There is a fairly active inquiry, and with a very limited supply prices are firm. We quote Bessemer and Open Hearth Rods at \$34 to \$35 and Basic Chain Rods \$35, maker's mill.

Skelp.—The demand has been rather quiet within the past week or two, but the mills have a fair amount of tonnage on their books. Prices are only fairly firm and for desirable tonnage our figures would probably be shaded. We quote: Grooved Iron Skelp at 1.70c. to 1.75c., Sheared at 1.80c. to 1.85c., Grooved Steel Skelp, 1.65c., and Sheared, 1.70c. to 1.75c. These prices are for ordinary widths and gauges and are f.o.b. maker's mill.

Muck Bar.—There is a fairly active demand and the market is firm, best grades of Muck Bar being held at \$28.50, Pittsburgh. A sale of 350 tons is reported at this price.

Steel Rails.—A fair amount of new tonnage is being placed and the Rail mills are pretty comfortably fixed with orders for the next several months. We quote Standard Sections at \$28, at mill.

Structural Material.—Local mills have entered orders in the past week for about 5000 tons and a good deal of

work is in sight. The Riter-Conley Company of this city has the contract for the new blast furnace of the Carnegie Steel Company, at Mingo Junction, and is figuring on several other large projects of a similar character. The general outlook for the Structural trade is regarded as very bright. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x 1/4 inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3 1/2 inches, 1.70c.; Zees, 3-inch and large, 1.60c.; Tees, 3-inch and larger, 1.65c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—As anticipated, the Plate Association reaffirmed prices at its meeting in New York last week. The leading Plate mills are filled up for the next two or three months, and orders from Steel car shops, boiler works and other consumers are very heavy. We note one contract for 2500 tons of Plates taken by a local mill this week. Prices are very firm, and we understand that some of the Eastern mills are asking slight premiums on Plates for prompt shipment. We quote: Tank Plate, 1/4-inch thick, 6 1/4 to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than 1/4-inch to and including 3-16-inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	
TERMS. —Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of 1/2 of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.	

Sheets.—The output of Sheets continues enormously heavy, and the leading mills are pretty well filled up. It is said that some of the jobbers who have large stocks of Sheets bought when prices were considerably lower are shading mill prices to a slight extent in some cases. The general market, however, is firm, and we quote: Black Sheets, No. 24, box annealed, one pass through cold rolls, 2.15c.; No. 26, 2.25c.; No. 27, 2.30c., and No. 28, 2.40c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.23c.; No. 28, 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at \$2.95 for 2 1/2-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—A moderate amount of new tonnage is being placed in Steel Bars, but the demand for Iron Bars is not quite as active as it was and prices are a shade easier. Some of the large jobbers who have stocks of Steel Bars bought when prices were about 1.30c. to 1.35c. are inclined to make concessions for good tonnage. We quote Common Iron Bars at 1.65c. and Refined Iron Bars 1.70c. to 1.75c., f.o.b. Pittsburgh. For nice orders and desirable sizes to roll it is probable that some mills would slightly shade these prices. We quote Bessemer and Open Hearth Steel Bars at 1.50c., base, for carloads and larger lots, with the usual advance for smaller lots.

Hoops and Bands.—These are unchanged and remain on the basis of 1.65c. for Steel Hoops and 1.50c. for Bands, extras on the latter as per National Steel Bar card. Practically no new tonnage is being placed, consumers being covered by contracts made when prices were lower.

Cotton Ties.—The mills have not yet got together to fix prices for this season's delivery.

Tin Plate.—The mills continue to make very heavy shipments of Tin Plate and demand is quite active. It is expected that output of Tin Plate this year will break all previous records, and all the indications point to a consumption equally as heavy. We quote 100-lb. Cokes at \$3.50 net, f.o.b. Pittsburgh, terms 30 days or 2 per cent. off for cash in 10 days.

Merchant Pipe.—Current demand for Merchant sizes of Pipe is fairly active, but jobbers have pretty large stocks on hand and in some cases are shading official prices to some extent. Oil country goods are dull, but are expected to improve in demand with the advent of favorable weather. Discounts to consumers in carloads, which are sometimes shaded by the jobbers, are as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1/4 and 1/2 inch.....	67 1/2	51 1/2	65 1/2	49 1/2
3/4 and 1 inch.....	71 1/2	59 1/2	69 1/2	57 1/2
1 1/4 to 6 inches.....	75 1/2	65 1/2	74	64
7 to 12 inches.....	70 1/2	55 1/2	69	53 1/2
Extra strong, plain ends.				
1/2 to 3/4 inch.....	60 1/2	48 1/2	58 1/2	46 1/2
1 to 4 inches.....	67 1/2	55 1/2	65 1/2	53 1/2
4 1/2 to 8 inches.....	63 1/2	51 1/2	61 1/2	49 1/2
Double extra strong, plain ends, 1/4 to 8 inches.....	56 1/2	45 1/2	54 1/2	43 1/2

Boiler Tubes.—The demand continues quite active, especially from the railroads, which we are advised are placing liberal orders. Carload discounts to consumers are as follows:

	Iron.	Steel.
1 to 1 1/2 inches.....	43	46
1 1/2 to 2 1/4 inches.....	43	58
2 1/2 inches.....	48	60
2 3/4 to 5 inches.....	55	66
6 to 13 inches.....	43	58

Merchant Steel.—While new tonnage is light, specifications from Implement makers and other large consumers are being received very liberally and serve to keep the mills well filled up. Prices are fairly firm, but on some grades of Steel competition is exceedingly keen and concessions are obtainable. We quote: Tire Steel, 1.65c. to 1.75c.; Smooth Finished Machinery Steel, 1.75c. to 1.85c.; Open Hearth Spring Steel, extra quality, 2.25c. to 2.50c.; Tool Steel, ordinary grades, 5 1/2c. to 8c.; extra grades, 10c. and upward. We quote Cold Rolled Shafting at 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The current demand is quite heavy and the mills have all the business they can handle. Prices are firm, but unchanged, and we quote Railroad Spikes at \$1.70 per 100 lbs. in carloads and \$1.75 per 100 lbs. in smaller lots, f.o.b. maker's mill.

Spelter.—The market continues dull and prices are weak. St. Louis quotes about 5.75c., equal to 5.87 1/2c., Pittsburgh, but on a firm offer this price could probably be materially shaded.

Coke.—We can report an easier market on Coke, due to the enormous output and to a full supply of cars. Both furnaces and foundries are getting Coke as fast or faster than they can use it, and spot demand has almost entirely disappeared. Strictly Connellsville Furnace Coke for prompt shipment is freely offered at \$2.25 or lower, while other good brands of Furnace Coke made outside the Connellsville region can be bought as low as \$2 a ton at oven. Strictly Connellsville 72-hour Foundry Coke is quoted at \$2.75 to \$2.85 a ton at oven. The output of Coke last week in the Upper and Lower Connellsville regions was 346,700 tons, about the same as the previous week. Should the present heavy output of Coke be maintained and the railroads continue to furnish promptly all the cars needed it is not unlikely that prices of Coke may go a little lower.

Iron and Steel Scrap.—While the demand for Scrap is only moderately active, prices continue quite firm. Heavy Melting Stock is quoted at \$16.25 to \$16.50 for large lots, but it is probable a small tonnage could be picked up at about \$16. Bundled Sheet Scrap is in active demand and is held at \$15.25 to \$15.40; No. 1 Wrought Scrap is \$19.50 to \$20; Cast Iron Borings, \$10.25 to \$10.50; Steel Rails, short pieces, \$16 to \$16.50; Wrought Iron Turnings, \$13.75 to \$14; No. 1 Cast Scrap, \$15.50 to \$15.75, and Iron Car Axles, \$22.50 to \$23, all in gross tons, f.o.b. Pittsburgh.

Cincinnati.

FIFTH AND MAIN STS., April 12, 1905.—(By Telegraph.)

Pig Iron.—An analysis of conditions as they apparently exist shows without exception a continuation of the dullness and apathy that were so pronounced last week. While reports from other territory show considerable tonnage having been contracted for, this immediate section has benefited only in a minor way by the reported activities. Agents say that the week just closed has brought no inquiries of any moment and what sales were made consisted of small lots and for early deliveries. The reason no doubt for this restricted buying movement is the simple fact that in a majority of cases consumers are fully covered into the summer season and have determined to wait until absolutely necessary before contracting for a later period. Shipments are being held up in many instances on the part of consumers for lack of storing facilities, which is not without its effect. Furnaces are said to be firmly maintaining the established schedule of prices and there is apparently no point of weakness shown. General foundry business is said to be better than a month previous, yet it has not reached the proportions that were expected of it. Agricultural implement makers, car shops and wheel manufacturers, as well as the Pipe interests, are reported as having orders booked far into the future and are necessarily melting a very considerable tonnage. Local foundry interests are quiet, nothing particularly doing. The

Graham Furnace, Graham, Va., will blow in during the coming week. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$16.75 to \$17.00
Southern Coke, No. 2.....	16.25 to 16.50
Southern Coke, No. 3.....	15.75 to 16.00
Southern Coke, No. 4.....	15.25 to 15.50
Southern Coke, No. 1 Soft.....	16.75 to 17.00
Southern Coke, No. 2 Soft.....	16.25 to 16.50
Southern Coke, Gray Forge.....	15.25 to 15.50
Southern Coke, Mottled.....	14.75 to 15.00
Ohio Silvery, No. 1.....	20.65 to 21.15
Lake Superior Coke, No. 1.....	17.40 to 17.65
Lake Superior Coke, No. 2.....	16.90 to 17.15
Lake Superior Coke, No. 3.....	16.40 to 16.65

Car Wheel and Malleable Iron.

Standard Southern Car Wheel.....	\$18.50 to \$19.00
Lake Superior Car Wheel and Malleable	18.00 to 18.50

Coke.—Conditions are easier, with supply plentiful. The car situation is better, consumers being well taken care of. We quote best grades of Conneville Foundry from \$2.75 to \$3, f.o.b. ovens.

Plates and Bars.—Established quotations are unchanged, with demand on the increase. Prospects are bright for an exceptionally heavy tonnage during the year. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—The situation is reported to be only fairly active, dealers claiming demand is very light in all quarters. Prices are unchanged. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$17 to \$18 per net ton; No. 1 Cast Scrap, \$14 to \$14.50 per net ton; Iron Rails, \$21.50 to \$22 per gross ton; Steel Rails, rolling mill lengths, \$14.50 to \$15 per gross ton; Relaying Rails, 56-lb. and upward, \$23 per gross ton; Iron Axles, \$21 to \$22 per net ton; Car Wheels, \$16 to \$17 per gross ton; Heavy Melting Scrap, \$14.50 to \$15 per gross ton; Low Phosphorus Scrap, \$17 to \$18 per gross ton.

Cleveland.

CLEVELAND, OHIO, April 11, 1905.

Iron Ore.—The lake situation has been cleared up remarkably during the past week and the season of navigation will now open as soon as the ice is out of the channels between the lakes. This is expected to be about the latter part of this week. The last reports from the Soo have it that the channels will be opened on the 15th. The reports which came to hand this morning from Escanaba say that the boats will be able to get in there on Saturday. Meanwhile a good many boats are bound up and some are bound down Ore laden. It is possible, of course, that with the assistance of tugs they will be able to force a passage before the 15th. During the week the dock managers were able to effect a settlement with the longshoremen. All classes of labor have now been settled with and the labor horizon is consequently very much clearer than it has been for a long time. As to the lake rates, there is not very much of a demand for wild boats at the present time. All of the tonnage that has been loaded has been under contract with the shippers. There has been a little inquiry, however, for wild boats and the rates which have been offered were the same as the contract rates—namely, 75c. from Duluth to Ohio ports, 70c. from Marquette and 60c. from Escanaba. There is not very much Ore being sold, but it is evident from the sales of Pig Iron that a good deal of Ore yet remains to be sold before the year is out. On all sales made the prices have held as they were at \$3.75 for Bessemer Old Range, \$3.50 for Bessemer Mesaba, \$3.25 for non-Bessemer Old Range and \$3 for non-Bessemer Mesaba.

Pig Iron.—The buying of Foundry Iron for immediate delivery continues light, due to the peculiar situation presented of most foundries having bought about all they will need and most of the furnaces being well sold up for the remainder of this quarter. There is a good deal of buying for third and fourth quarter, with many consumers covering their needs for the entire second half of the year. Neither on spot shipment nor on contracts for future delivery is there any tendency to change prices, \$16 at the furnace for No. 2 being the price generally paid. There is still a good demand for Basic. The producers are not bound to any degree by the conservative policy prevailing in the Bessemer trade, and the furnaces are taking what the market will stand. There is a good deal of Iron now selling at \$15.50 in the Valley, with the furnaces demanding \$16 on advance shipments. Their action is based upon the possible shortage of the supply in view of the demand which is apparent. The Coke situation is strong, with some of the

smaller ovens inclined to advance the prices due to the shortage of the material. The standard ovens, however, have been holding for the same old prices which have prevailed heretofore. The quotations from the standard ovens are \$3 for good 72-hour Foundry Coke, with Furnace Coke bringing \$2.60. The smaller ovens have been holding for \$3.15 to \$3.25 for the best grades of Foundry Coke and \$2.75 for Furnace Coke.

Finished Iron and Steel.—The strongest part of the Steel trade in this territory during the past week has been in the Rail line. A good many of the traction properties have started to construct extensions which have been held in abeyance for the past two years due to the poor market for the flotation of new securities. Relieved from any distress in that quarter, and supplying the evident need for feeders, the tractions are building. Several other new projects are on foot which will produce a good deal of business during the coming weeks. One big order has just been closed, and to-day another order amounting to about 4000 tons was closed. Several other contracts of these dimensions will be closed before the week is out. Traction line buying in this immediate territory has taken the place of the steam railroad consumption, and is about establishing a parity as to business with the few years last past. In the general situation the consumers in this territory are feeling the effects of the more congested conditions in the Eastern mills. A good many overflow orders from what the mills in this territory could accept have been going into the East. Now that the Eastern mills are filling up with orders they have not so much capacity open to business from this section, with the result that the scarcity here is even greater than it has been and shows signs of getting worse. Jobbers therefore report an unusually heavy run of business. In the Structural situation buying of lighter sizes is good. Before the week is out an order will be placed for 1500 tons for a new building, which is to be erected in the heart of the city. Several other good contracts are immediately ahead. The Plate trade is strong, with consumers having difficulty to get shipments on their contracts. In Bars there is good buying of Steel. The consumers whose year begins with July 1 have not commenced to cover next year's contracts as yet, but buying on this year's business to run over into next year has been heavy and the mills are full. The Iron market is stronger. A while ago there were a good many small mills that sold as low as 1.50c., Youngstown. Now all of the mills are well filled with orders and the lower prices are disappearing. The general run of quotations is from 1.60c. to 1.65c., Youngstown. The Sheet trade is steady. Quotations out of stock on Blue Annealed are based on No. 10 at 2.15c. American Bessemer out of stock is quoted at 2.80c. for No. 28 as a base. In car lots at the mill No. 16 Blue Annealed is selling at 2.15c.

Old Material.—The market has been about steady, with a little increase in buying shown. The prices have not changed, although a good many of them are nominal. We continue to quote, all gross tons: Old Steel Rails, \$16 to \$16.50; Old Iron Rails, \$22.50 to \$23; Old Car Wheels, \$16 to \$16.50; Heavy Melting Steel, \$16 to \$16.50. All net tons: Cast Borings, \$8.50 to \$9.50; No. 1 Busheling, \$14; No. 1 Railroad Wrought, \$16 to \$16.50; Iron Car Axles, \$21 to \$22; No. 1 Cast, \$13.50 to \$14; Stove Plate, \$11 to \$12; Iron and Steel Turnings and Drillings, \$11 to \$12.

Birmingham.

BIRMINGHAM, ALA., April 10, 1905.

There is no use quoting the market, for the moment, above a basis of \$13.50, for acceptable business has been registered on that basis, and at this writing more would be taken as offered. The deliveries were as a rule made to suit buyers' desires. In some cases they were restricted to within 90 days; in others they were extended to include the third quarter, and in not infrequent cases they were extended to cover the fourth quarter when delivery for the second half was stipulated. The interesting part of prices is the fact that the market is almost a single price market. In deliveries it is accommodating, and buyers' preferences are "the go."

The market was not what one might term an active one, but a good deal of business was booked in a quiet way. A good part of the concluded transactions was for account of important interests, whose names are withheld. One of the leading makers reports a good business, fully equal to current output, at prices varying from \$13.50 to \$13.75 basis, and a material part of it above these figures. In deliveries they are spread over the entire year, but their bulk is confined to the third quarter. Another important maker reports sales of 5000 tons on the basis of \$13.50 for No. 2 Foundry, and all of it for delivery during the last half of the year. Another maker that has been holding for higher prices sold 1000 tons on the \$13.50 basis for No. 2 Foundry, shipments to commence in the very near future and extended to include the third quarter. There were a number of orders on the market on this basis, which made a good

business without any showing of great activity. A very prominent interest said to your correspondent that since it has re-entered the market it was selling a moderate amount and the aggregate transactions were very satisfactory. It is estimated by those who have kept tab on the sales of late that about 40,000 tons have been sold this month to date. There are others who put it at a materially greater amount. It is safe to put it at 40,000 tons.

A difference of 50c. per ton is made between Nos. 2 and 3 Foundry, which makes the latter now \$13, although No. 4 Foundry sold in a limited way at this price. Gray Forge is quoted at both \$12.50 and \$12.75, with sales at each price. When you get below No. 3 Foundry the difference between grades is only 25c. in some cases, but there is no uniformity about it. The grade is unevenly distributed among the sellers, and circumstances dictate the price. Charcoal Iron this past week sold at \$17.50.

Affairs are easing up gradually for those who have suffered some mishaps from insufficient supplies of raw material. While there has been some improvement, there is a prospect of still greater in the immediate future. The difficulties as to fuel for the furnaces are being surmounted and before midsummer they will probably all be dissipated and we will be back to normal conditions again.

If things do not miscarry we will probably have another furnace company, composed of parties who are in the main unknown to the Iron world, but the negotiations have not reached that stage when matters can be mentioned with definiteness. As things now appear it has every prospect of successful fruition.

The report of the Southern Iron Committee shows that the shipments for the month of February cover a tonnage of 125,142 gross tons, of which 114,179 tons were Pig Iron. Of this aggregate this district furnished 62,072 tons. Of the 10,936 tons of Pipe reported this district furnished 5688 tons. The shipments of Steel were all from the Tennessee Company and comprised 7297 tons of Billets and 5322 tons of Rails. The aggregate of the Steel shipments was 12,619 tons. As February was a short month, we may expect a much better report for March. The exports were insignificant, amounting to only 346 tons.

The Southern Car & Foundry Company has finally had its affairs wound up by the court, and there was a distribution of assets, in which the creditors concurred. It has not been developed as yet what will become of the company.

Some valuable contracts have been let for important buildings. Others are under contract and the summer bids fair to be the most active one in the building line we have ever had.

The coroner's jury, after an investigation as to the cause of the explosion at the Virginia City mines of the Alabama Steel & Wire Company, February 20, reports that the explosion was a dust explosion and would never have occurred had the owners and operators heeded the admonitions made at intervals during the year preceding by the State Mine Inspector and his assistants. The verdict will probably give rise to many lawsuits.

At a meeting of the stockholders of the Fort Payne Stove & Foundry Company held on Wednesday it was resolved to rebuild the plant which was burned some time ago, and it is expected that by June it will be in operation again.

Duty on Magnesite Fire Brick.—Practically every manufacturer of fire brick of any consequence in the United States was either present or represented at a hearing held in New York, April 11, by General Appraiser Sharretts to determine the duty on magnesite brick. The brick had been assessed at 25 per cent. under the clause in the tariff law providing for "brick other than fire brick." The protest against this classification stood in the name of O. G. Hempstead & Son, customs brokers, of Philadelphia, and it is understood that they represent several importers. They claim that the brick is dutiable as fire brick weighing less than 10 pounds each at \$1.25 a ton. The domestic manufacturers declared at the hearing before Mr. Sharretts that if the imported magnesite brick were admitted at the low rate of duty it would drive the domestic brick from the market. They testified unanimously that magnesite brick had never been commercially known as fire brick and was a totally different article from the brick sold under that name. The Government counsel pointed out that the \$1.25 rate on magnesite brick, which is worth from \$125 to \$130 a ton, would amount to less than 1 per cent., while on the better grades of fire brick, worth from \$20 to \$25 a ton, the rate is about 10 per cent. Counsel for the importers argued that as under the law of 1894 magnesite brick was specifically provided for at \$1 a ton, the intention of Congress was clearly to fix a low rate of duty on it.

OBITUARY.

DUNCAN SYMINGTON, a well-known resident of Detroit, Mich., for 36 years and until a few years ago superintendent of the Frontier Iron Works of that city, died recently after a lingering illness, aged 56 years. He was born in Glasgow, Scotland.

GEORGE B. TURRELL, who died recently at the age of 80 years at South Orange, N. J., had been a director of the Union Hardware Company, Torrington, Conn., from the time of its foundation. In 1854 he established the firm of Migeon & Turrell, New York. In 1888 he went to New Jersey and established the so-called "Model Farm of New Jersey." He originated, it is said, the present method of cooling and aerating milk. He was also the inventor of the Turrell pavement.

WILLIAM MINNIGERODE, iron and steel merchant, Lynchburg, Va., died of typhoid pneumonia March 27, aged 55 years. He was born in Richmond, was the son of an eminent Episcopal clergyman and throughout his life was distinguished for his piety. For 25 years he was actively engaged in business in different cities of the South and in Philadelphia. For the past eight years he was a resident of Lynchburg. He is survived by his widow, one son and two daughters.

JOHN ROHAN, president of the John Rohan & Son Boiler Company, St. Louis, Mo., died of heart disease March 26, aged 72 years. He was born in Callan, County Kilkenny, Ireland, in 1833, and went to St. Louis in 1849 with his parents. He learned his trade in the shops of the Gady-McCune Company, one of the largest boiler makers in St. Louis before the war. Later he was foreman for other firms, and about 1865 branched out as a manufacturer, in partnership with Joel F. Allison. This continued until 1870, when the firm of Rohan Bros. was formed with his brothers Phillip and Michael as partners. The present company succeeded this in 1892. Mr. Rohan was a staunch temperance advocate and also an abstainer from tobacco. He often remarked that he had never entered a barroom in his life. During the Civil War Mr. Rohan built the boilers in the monitors which the Government constructed at the Carondelet shipyards, and this experience led him to engage largely in the manufacture of marine boilers for river steamers. He is survived by his widow, two daughters and four sons.

FRANK J. STEVENS, who was hurt recently in an automobile accident near Monte Carlo, received injuries from which he died April 4. He was born in New Haven, Conn., May 13, 1863. Immediately after being graduated from the Sheffield Scientific School with the class of '85 he became connected with the New Haven Clock Company, was at the time of his death its secretary, and of late years had been also its resident London agent and the head of the house of Jerome & Co. of London and Liverpool, founded by his grandfather. In order to handle the foreign business of the clock company Mr. Stevens had within a few weeks arranged matters so that the old firm of Jerome & Co. has been absorbed by the New Haven Clock Company, and its business is now carried on under the new title.

The formal opening of the new ship canal connecting the large plant of the Buffalo & Susquehanna Iron Company with the new outer harbor at Buffalo took place April 10. The canal, which is 4000 feet long, 200 feet wide, and will take vessels of 23 feet draft, will serve the Buffalo & Susquehanna Iron Company, the Buffalo & Susquehanna Railroad and the Pennsylvania Railroad, it having been built jointly by the three companies. The cost was about \$1,500,000. Concrete docks line both sides of the canal, and piers have been built extending some distance into the harbor on either side of the canal entrance. The Buffalo & Susquehanna Iron Company will operate a new fleet of ore boats, and fuel for the furnaces of the new plant will be brought from the company's coal fields in Pennsylvania by the Buffalo & Susquehanna Railroad, whose Buffalo extension is now nearly completed.

The Machinery Trade.

NEW YORK, April 12, 1905.

There has been quite an improvement in the demand for machine tools during the past week, orders and inquiries sharing alike in the increase. While these continue to come in in greater volume they are generally of small caliber, though a few medium sized contracts, in the neighborhood of \$20,000, were closed for machine tools, making in all an aggregate of actual business transacted that is fairly good. No orders covering an extensive list of tools are reported. Taking everything into consideration the machinery market as a whole is apparently in a very healthy condition, which is doubtless a sign of heavier business in the immediate future; in fact, many in "the street" intimate that they are confident that a renewal of activity among large purchasers is at hand. One of the chief reasons for this feeling of confidence is the purchases of machinery now being made and the way in which the preparation of plans has been expedited for additional tunnel construction.

Unusual interest is being taken by machinery houses in the convention of the National Machine Tool Builders' Association, now being held at Washington, D. C., a more detailed report of which appears in another column. It is expected that at the sessions the members of the association will act upon certain matters that will have an important bearing on the machine tool trade and that several momentous questions will be favorably disposed of.

The New Tunnels.

To those in all lines of equipment who have benefited by the tunnels now building and the completed Subway there have been no developments for some time so important to their interests as those of the past week. While it has been generally known that the Belmont interests were to construct a tunnel under the East River to provide an entrance into New York for their trolley system on Long Island, it has not been suspected that their plans had matured to the point where actual work of building could be commenced early in the summer. We understand that specifications now in preparation are so far advanced that bids for the work will be asked this spring. The specifications which are being prepared by the engineers of the New York & Long Island Company, one of the Belmont enterprises, provide for the construction of a tunnel under the East River from a point in Queens County east of the Long Island Railroad yards in Long Island City to Manhattan. The company has obtained a franchise permitting it to extend the tunnel as far west as Eleventh avenue on the New York side, where the level will be below that of the present Subway. The tunnel will be in most respects similar to those of the Pennsylvania Railroad Company under the North and East rivers and will be constructed of cast iron rings, making it practically an iron tube. As the details have not yet been worked out it is impossible to ascertain the quantities of material that will be required for executing the work, but from the fact that it is to be built along the lines of the Pennsylvania tube some idea can be formed as to the great tonnage of castings that will go into its construction. By referring to the tonnage of iron contracted for in connection with the East River tube of the Pennsylvania Railroad now being built by S. Pearson & Son, Limited, we can approximate the amount that will be required by the New York & Long Island Company. The Pennsylvania tunnel required about 120,000 tons. This, however, consists of four tubes, so that if the newly projected tunnel is to consist of only two tubes it is likely that the successful contractor will come into the market for half that amount, or 60,000 tons. Then in addition there is the large quantity of mechanical equipment necessary for doing the work. It will be remembered that both of the contractors for the Pennsylvania tubes were large purchasers of boilers, engines, air compressors, shields, hydraulic machinery, pumps, &c., while the railroad companies installed extensive power plants for operating the cars. The construction of this new tunnel will mean a continuous express service from Jamaica, L. I., to New York for the New York & Queens County Railroad Company, whose cars will run through the tubes.

Orders for four 17-foot shields, to be used in the construction of the second of the three projected tunnels under the Hudson River, have been placed with the Watson-Stillman Company, 48 Dey street, New York, by the Hudson Tunnels Company, including the hydraulic machinery. It is understood that the proposed tunnel, which will extend from the foot of York street in Jersey City to the neighborhood of Cortlandt street in this city will be worked from the Jersey City side only and not both ways as the first tunnel was. It is stated that plans are in preparation for a massive building at the New York end of the tunnel, and in addition to a terminal for the tube, the structure will be used as an office building. The digging on the second bore of the tunnel from Jersey City to Morton street, Manhattan, has been about completed, and it is thought that the bore will be forced through by the end of April.

New Roney Stoker Plant.

The large plant which the Westinghouse Machine Company began building at Attica, N. Y., in 1903, for the manufacture of Roney mechanical stokers, is to be completed during the coming summer. The company's engineers have completed such alterations of the original plans as were desirable, and the work of construction will be begun at once. E. E. Kellar, vice-president of the company, whose offices are at Pittsburgh, has spent some time at Attica of late and details of construction were completed under his supervision. The foundations and walls of the plant were built in the summer of 1903 and the original plans in the main will be carried out. The plant will consist of a foundry, machine shop, pattern shop, power house and office building. The foundry will be 60 x 500 feet, while the machine shop will be 100 x 250 feet. The pattern shop will be 35 x 250 feet; power house, 35 x 100 feet, and the office building, which will be separated from the other structures, will be a small, neat brick building. The buildings will be of modern fire proof construction, mainly of brick and steel, with concrete floors. More than half a mile of railroad track will be laid and one track will pass through the main building. No purchases of machinery have been made as yet, it is understood, and a large amount of money will be spent in that line. The company will need a complete machine shop equipment, power house outfit and the necessary foundry equipment, besides steel rails and cars for transporting material and completed machines. There is a possibility of the company consolidating its Western plant with the new plant at Attica. The addition to the Newark, N. J., plant of the Westinghouse Electric & Mfg. Company is nearly completed and the company is now occupying two or three of the floors. At this plant the company makes meters and other small electrical apparatus. The machine tool equipment for the new building has not all been purchased and it will not be surprising to see some nice orders placed very soon for the necessary machinery.

The Twin City Rapid Transit Company, Minneapolis, Minn., contemplates the erection of the following buildings during the present season, all to be of reinforced concrete construction: Two-story machine shop, 150 x 200 feet; wheel, axle and gear shop, 50 x 200 feet; foundry, 60 x 200 feet; smith and bolt shop, 50 x 200 feet; power house, 50 x 100 feet; mill building, 75 x 200 feet; track special work, 60 x 200 feet; paint shop, 126 x 300 feet; car house, 120 x 500 feet; two-story storehouse, 100 x 200 feet; dry kiln, 40 x 50 feet, and two-story office building, 50 x 75 feet.

Important Machinery Requirements.

The Atlantic Coast Line has just purchased a number of machine tools, aggregating \$15,000 in value, for equipping its Rocky Mountain shops. The orders were scattered among several merchants. The company is contemplating the building of new shops at Waycross, Ga., and is likely to come into the market for considerable in the way of machine tool equipment for the new buildings.

About \$35,000 worth of machine tools has recently been purchased by the Federal Signal Company from a few companies for equipping its new plant at Troy, N. Y.; while these purchases nearly cover the company's requirements, it is thought that there is considerable more mechanical equipment yet to be bought.

A few weeks ago we stated that the Fawcus Machine Company, Pittsburgh, Pa., had purchased considerable heavy machinery for equipping the extensions to its plant in order to double its capacity for the manufacture of cut gears and bridge machinery. In addition to that already ordered the company requires a large boring mill, a large lathe and some gear cutting machinery. A number of machine tools will also be needed, but the specifications for these have not yet been prepared.

The Bechtold Crucible Steel Company, Cleveland, which recently purchased the large plant of the Standard Motive Power Company at Canal Dover, Ohio, which it is to enlarge, is not yet ready to issue its list for new machinery and other equipment that will be required to fit out the plant properly for the manufacture of its products.

Boilers, engines, coal crushing machinery and all appliances that usually go into the make up of a coal breaker will soon be purchased by the Lehigh & Wilkes-Barre Coal Company, Wilkes-Barre, Pa., which is to rebuild its Sugar Knotch No. 9 breaker on approximately the same site occupied by the old structure. The plans have not yet been completed. The capacity of the new breaker will be about 1500 tons per day.

Two large power punches, two emery grinders and two large power drills are required by the Rochester Steel Stanchion Company, Rochester, N. Y., which was recently organized and which has taken up a plant for the manufacture of its all steel stanchions. The company is, however, negotiating for its own property and will move as soon as the deal is closed. The officers are Chas. W. Mayer, president, and Geo. W. Mische, secretary and treasurer, who with K. A. Mayer constitute the Board of Directors. The business has been carried on by the same parties for some

time, but the increased sales of the stanchions forced them to incorporate to increase their capacity.

The Carver File Company, 3151 Frankford avenue, Philadelphia, Pa., intends equipping its new plant with the most modern machinery for the production of first-class files, made of crucible cast steel, and will install file machinery, rolls, hammers, cutting machinery, &c. Samuel E. Carver, who is at the head of the enterprise, has had a long experience in the file manufacturing business, having been connected with the Black Diamond File Works for over 28 years.

Col. J. H. Macleary, who recently purchased the plant of the Bowen & Street Equipment Company, Suffolk, Va., is in the market for a double head wheel lathe from 64 to 72 inch swing, 30-inch planer and a small steam hammer.

The T. A. Gillespie Company, Pittsburgh, Pa., which has the contract for the Pittsburgh filtration system, informs us that it has arranged for the purchase of all the machinery that will be required for executing the work.

Bids are now being received for the building which the Crescent Mfg. Company, Greenfield, Ohio, is to erect at Louisville, Ky., and specifications for the power and machine tool equipment will be ready for distribution in about 60 days. The new building will be 120 x 373 feet and will cost about \$25,000. Other buildings will be added in the near future. The company now operates a plant at Greenfield, but has decided to move to Louisville.

It is expected that the American Cereal Company will start early in the summer upon the rebuilding of its plant at Cedar Rapids, Iowa, which was recently burned. The plans for the new buildings are not yet quite complete.

J. A. Gilluly, hardware merchant, Arden, Manitoba, Canada, desires to be placed in correspondence with manufacturers of cement brick machinery.

A high pressure water system, to cost about \$350,000, for fire protection only, has been authorized by the Winnipeg City Council, Winnipeg, Man.

The Fairbanks Company, New York, has been awarded the contract for the machine tools for the machine shops of the water department, Baltimore, Md.

Power Plants.

The Department of Bridges will receive bids until April 20 for the construction and equipment of an electric plant at Tompkins street and Delancy slip, Manhattan, for the new Williamsburg Bridge. The plant is designed for the generation and transmission of electricity for light and power purposes, and will be equipped with boilers, compound engines, condensers, generators, pumps, feed water heaters, stokers, &c. The building will be 50 x 60 feet.

A large central power plant is to be established at Utica, N. Y., by the Hudson River Power Company to furnish power for the Interurban Railroad system between Hudson and Utica, N. Y., a distance of about 180 miles. The plant will be equipped with seven 500 horse-power Franklin water tube boilers with Duluth chain grate stokers and Curtis turbines. This new steam plant is to be used to supplement the hydraulic plants by which the system is operated, so that when the water power becomes low by reason of a dry season the company will have sufficient power to operate its lines. This is the first development of the New York Central Railroad to carry out its plans for operating its branch lines by electricity.

Orders are now being placed by the Halcomb Steel Company, Syracuse, N. Y., for equipping its new plant, power for which will be supplied by a 2000 horse-power plant. The company has thus far purchased a 1000 horse-power heavy duty rolling mill engine from the Hooven-Owens-Rentschler Company, 39 Cortlandt street, and four 500 horse-power Franklin water tube boilers, which are sold by the Franklin Water Tube Company, 39 Cortlandt street, New York. The boilers will be equipped with Foster superheaters.

It is stated that the Norfolk & Western Railroad has completed plans for the erection of a large electric plant at Lambert's Point, Va.

Business Changes.

The firm of Jones, Park & Co. has been formed to succeed to the business of the late house of Park, Son & Co., West Indian and general export and import merchants. The new concern went into effect on April 5.

The Niles-Bement-Pond Company announces that it has leased an entire floor in the new Trinity Building, at 111 Broadway, and will be located there after May 1. The company's executive offices have been located in New York since its organization under its present title. The concern employs about 3000 workmen, and is said to be the largest builder of iron working machinery in the world. It has two factories at Philadelphia, Hamilton, Ohio, and Plainfield, N. J., besides owning the Pratt & Whitney Company at Hartford, Conn.

Another firm to take up its quarters in the Trinity Building is the National Electric Company of Milwaukee, which manufactures the Christensen air brake and electrical machinery. The company is moving from its present quarters at 135 Broadway, New York, because of the limited

space there and will occupy a suite of offices on the eighth floor of the new structure.

The New York office of the Crosby Steam Gauge & Valve Company will be located at 16 Dey street on and after April 15, instead of 78 John street, where the company has been for so many years.

In order to meet the demands of its rapidly increasing business the H. W. Johns-Manville Company, New York, has appointed T. T. Lyman, who has been connected with the company for many years, general sales manager.

The H. A. Rogers Company, 19 John street, which represents, among other manufacturers, the well-known firm of Bental & Margedant, manufacturers of wood working machinery, Hamilton, Ohio, has engaged E. W. Saunders to devote his attention to its machine tool department. Mr. Saunders has for many years been identified with the machine tool trade in New York.

The Ridgway Machine Tool Company, Ridgway, Pa., has appointed the Hallidie-Henshaw-Bulkey Company, Seattle, Wash., sales agent for its line of machine tools.

New England Machinery Market.

WORCESTER, MASS., April 11, 1905.

The condition of the machinery market has changed but little since last week. The demand is good and growing better. The machine tool manufacturers are very well satisfied, with an occasional exception where conditions have been less propitious than the average; but these instances must be no more than temporary, for general manufacturing is picking up and the customers of the tool manufacturers are finding the demand for new equipment more and more imperative. The orders are usually for small lots, which means larger profits than where long lists of tools are figured by every one, with consequent cutting of prices.

Textile Machinery Manufacturers Combine.

Much interest is shown in New England in the change in ownership of the Lowell Machine Works, Lowell, Mass., which has now passed into the possession of interests practically identical with the Saco & Pettie Machine Shops, Newton Upper Falls, Mass., and Biddeford, Maine. The Lowell Machine Shop builds textile machinery and a line of worsted machinery. It is a large business, employing more than 2000 hands, and has a high position in the trade for the quality of its product. It is a Massachusetts corporation, with a capital stock of \$900,000. The control of the stock was obtained by Robert E. Herrick, a Boston lawyer, who is acting for the new owners and is the present treasurer of the corporation. It is probable that a new treasurer and Board of Directors will be elected in the near future. Charles L. Hildreth, the veteran superintendent of the shops, and Edward N. Burke, the office manager, will remain with the business. It is planned to continue the shops as a separate business and as a distinct corporation, but the management will be in a general way the same as that of the Saco & Pettie Machine Shops. The latter corporation is an important one, employing about as many hands as the Lowell Machine Shop. The two have been competitors in many lines of cotton machinery, but the Saco & Pettie Machine Shops does nothing with worsted machinery.

It is possible that this merging of interests may extend much farther than the two companies named above. Report has it that the Draper Company, Hopedale, Mass., and the Whitin Machine Company, Whitinsville, Mass., are also included. Nothing official can be learned of this, but such is the popular belief among the Boston machine tool dealers, who watch these companies very closely, because they are large customers at times, all being very prosperous as well as very large, and additions to their plants are frequent. No absolute denial is made of this greater merger, even while it is not confirmed. If it proves to be true it will be a very important matter, for the four companies combined would have an exceedingly great influence in the cotton machinery market.

A. J. Ross, Worcester, Mass., has established a shop at 42 Washington street, where he will manufacture ornamental iron work, including elevator cars, stairs, store fronts, bronze tablets and bank screens. He is in the market for a heavy punch to shear 4 x 1/2 inch iron and cold iron saws, including a circular saw. Upright drills and other machinery will be purchased later. Mr. Ross was recently with the Wright Wire Company, Worcester, in charge of its ornamental iron work department, and previously with Brown & Ketchum, Chicago; Winslow Bros. Company, Chicago, and the W. S. Tyler Company, Cleveland.

The Hendey Machine Company, Torrington, Conn., is planning to largely increase its plant this season by the erection of a new building, 110 x 220 feet, of brick, steel and expanded metal construction. The building will be fitted with traveling crane and all modern appliances.

The city of Providence, R. I., is planning to make extensive additions to its technical high school, and it is understood that considerable equipment in the way of machinery and other mechanical apparatus will be required.

A syndicate of Boston men, headed by W. R. Chaffee, 95 Milk street, is planning to build a large garage on the site of the recently burned Harcourt Building, Harcourt street, Boston. The top floor of the building will be equipped as a machine and repair shop. The garage will be extensive and its appointments elaborate.

The Union Hardware Company, Torrington, Conn., will make extensive additions to its plant this season. A group of large buildings will be erected, comprising a factory building, 41 x 250 feet and two stories, with monitor roof over a portion of its length; factory building, 42 x 112 feet, one story, with monitor roof; forge shop, 50 x 200 feet; storehouse, 55 x 250 feet, and a power house, in which 650 horse-power will be developed.

Hill & Bosley, Winchendon, Mass., iron founders, are planning to erect a new foundry in that town, to be 48 x 120 feet. They have under consideration the purchase of a traveling crane, and may need some foundry equipment later on when the new building has been occupied.

The decision of the War Department to equip the new Springfield rifle with a longer bayonet will mean a great deal of work for the armory at Springfield, Mass. The armory has been very busy for some time manufacturing the new rifle, and the added work which the new bayonet will bring will add to the general prosperity of the institution. The machine tool people are watching for requisitions for new machine tools and other equipment.

The Thames Towboat Company, New London, Conn., has purchased the machinery and business of the Drummond Boiler Works of that city, and the machinery will be installed at the Thames Marine Railway & Shipyard, which the Thames Company operates at Riverside, near New London. While the company has employed boiler makers to do its own work, the acquisition of the Drummond business will result in rather a departure, as outside work will be done as well as making repairs on the company's own boats. The company states that it will undoubtedly acquire new tools from time to time as the demand makes necessary.

The Yale & Towne Mfg. Company, Stamford, Conn., is to erect a two-story brick building, 85 x 200 feet, to allow of an extension and consolidation of certain departments of the works.

Proposed Water Works Improvements.

The city of Pawtucket, R. I., has received a report from Percy M. Blake, expert engineer, regarding improvements to the city's water works system, in which he recommends the establishment of a new pumping station to replace the three now in use, to cost \$300,000. It is believed that the report will be favorably acted upon and the necessary appropriation made. The report calls for at least two pumping engines, of a capacity of 15,000,000 gallons each, together with the necessary steam boilers and other appurtenances of a power house. There should be installed immediately, according to the report, one triple horizontal pumping engine of 15,000,000 gallons per diem capacity, to cost complete with condensing appliances and trimmings ready for steam and water connections \$60,000; four horizontal tubular boilers to furnish steam pressure at 150 pounds, to cost \$10,300 set up; feed pumps and feed water heaters to cost \$4000, in addition to all the necessary foundations and accessories.

The Norwalk Electric Works, South Norwalk, Conn., will install a 250 horse-power engine and electric generator this season, because of increase in business. A. E. Winchester, general superintendent of the company, states that the merits of fuel oil and gas engines, as well as steam engines, as a motive power are being looked into and a choice will soon be made, when plans and specifications will be prepared. Work will be commenced as soon as possible, so that the plant may be in operation by the early autumn. The works are owned by the city.

Chicago Machinery Market.

CHICAGO, ILL., April 11, 1905.

Machinery business in all its branches is characterized by greater activity than for many weeks. No very large deals have been consummated, but the aggregate volume of small routine pick-up business for new manufacturing industries and renewals is highly satisfactory. A noteworthy feature of the situation to-day is the large number of relatively small manufacturing concerns that are applying for building permits in Chicago and Cook County and the large percentages of additions and enlargements to existing plants. Makers of boilers for power and heating purposes are full of business. Steam heating plants are in large demand. Makers of both steam and gas engines report a demand that taxes their ability to supply. Electrical machines, too, are sold more freely than they have been. In general, the machinery and power trades are in excellent condition. The only cloud on the horizon at present is the formation of a defense association, or a union of unions, by five metal working trades organizations, which is officially known as the Metal Trades Council No. 9, and which has sent out an ultimatum to all employers of labor in the metal trades to the effect that un-

less they agree to the terms of all five unions as submitted all their employees in all the five crafts will be called out on a strike. This is alluded to in greater detail elsewhere in this issue.

Manufacturers of building materials report an excellent trade and in some lines they are too far behind their orders for comfort. Building permits were awarded for the month of March by the city of Chicago for 665 buildings, costing more than \$6,000,000, as against 600 buildings in March of last year, costing a little over \$2,000,000. In fact, the March permits of this year were greater by about \$1,000,000 than the permits for January, February and March of last year. In point of cost March broke all records for the city of Chicago, even excelling 1901 and 1902, the World's Fair boom years.

Extensive Additions to Allis-Chalmers Plant.

It is officially announced that the Allis-Chalmers Company has decided upon extensive additions to its plant at West Allis, Milwaukee. Plans are being completed for the erection of three large buildings and the extension of two others. The new buildings will provide accommodations for the manufacture on a large scale of steam and hydraulic turbines, gas engines and electrical machinery of all kinds and of the largest type. The electrical department will be operated in connection with the extensive plant of the Bullock Electric Mfg. Company, at Cincinnati, owned by the Allis-Chalmers Company. It is expected the improvements contemplated, with full equipment, will cost approximately \$3,000,000.

Important Machinery Requirements.

The event of the week in machine tool circles was the receipt of specifications for quite a quantity of mechanical equipment for the various shops of the Northern Pacific Railroad Company. The list, which was sent out by F. G. Prest, purchasing agent, St. Paul, Minn., calls for bids on miscellaneous machines and tools.

The Chicago, Milwaukee & St. Paul Railroad Company is having plans prepared by J. U. Nottenstrom for a car erecting shop, to be added to its West Milwaukee (Wis.) plant. It will be a one-story structure, 103 x 200 feet. A paint shop of the same size is also to be added to the plant.

The recent city election resulted in such an overwhelming vote in favor of municipal ownership and operation of street railway lines, espoused by the Democratic party, that the Republican Aldermen have signified their willingness to co-operate with the newly elected Mayor in carrying out what seems to be the people's wish independent of party. How long it will require to bring about this change of ownership and control, and how well it will work after it does come to pass, if it ever does, is a matter of conjecture, but until this is settled machinery purchases by traction lines will naturally be conservative.

The Great Western Oil Refining & Pipe Line Company, Kansas City, Mo., has been incorporated with a capital stock of \$10,000,000. Three refineries will be built, a 50-acre site for the first of which has been selected at Erie, Kan. Location of the other two sites has not been decided, upon as yet. Pipe lines are to be laid connecting the oil producers direct with the refineries. W. P. Fife is president, W. R. Jones, secretary, and Ed. C. Rupard, general manager of the enterprise. Messrs. Fife and Rupard are now in the East purchasing the necessary machinery and other equipment for the plants.

The Armstrong Brothers Tool Company, Chicago, which is putting up a new building, has decided to install motors and purchase electric current for its operation, having closed a contract with the Commonwealth Electric Company to supply power. The company expects to install a high pressure boiler, which will be used only for low pressure service in connection with the steam heating building. Plans now are to have the building ready for occupancy May 1.

The American Mfg. & Construction Company, which is a successor to the American Copper, Brass & Iron Company, Otto Meinshausen president, is having plans drawn for a manufacturing plant at Wellington and Paulina streets, Chicago. Present plans call for only one structure, 100 x 275 feet, but the ultimate intention of the company is to erect a plant to cost about \$250,000. The plant will be equipped for the manufacture of copper and iron distilling and brewery house machinery. Bernard Bartell, 79 Dearborn street is the architect.

The Hart-Parr Company, builder of oil cooled gasoline engines, Charles City, Iowa, expects to increase the size of its machine shop by an addition 83 x 170 feet. This will be fitted with traveling cranes and used principally for erecting work. An addition is also contemplated to the foundry, 60 x 84 feet, for the purpose of increasing capacity in that department.

The Daly Spike Company, Detroit, Mich., is a new company organized to manufacture a new design of railroad spike. The company has a capital stock of \$25,000, and at its preliminary organization the following officers were elected: Harry W. Frost, president; Angus Smith, vice-president, and James H. Benedict, secretary and treasurer.

The capital stock is to be increased later and a large factory erected for the manufacture of the spike, which has been patented and will be made by a special machine constructed for the purpose. The spike instead of being a solid piece of square iron is hollow in the back and much lighter in weight than the old kind. Mr. Frost also controls the manufacture of the Harvey draft gear spring, which will also probably be made in Detroit. The present headquarters of the company are at 614 Majestic Building.

J. L. Adkinson of Superior, Wis., has leased, with an option of buying, the old plant of the Granite City Iron Works, St. Cloud, Minn. The shops are fairly well equipped with milling machines, drill presses and other machine shop equipment and will be operated by Mr. Adkinson in the manufacture of Colgrove potato harvesters, sleigh shoes and in doing a general foundry business. A punch and shear will be added to the equipment, which is operated by electric power.

Another large Chicago power and machinery user will be the Western Packing & Provision Company, a packing industry which was recently incorporated and which has just bought a 9-acre tract of land lying immediately north of the present Union Stockyards.

The Davenport Locomotive Works, Davenport, Iowa, whose large machinery requirements were noted in these columns a few weeks ago, has placed orders with A. M. Castle & Co., Chicago, representing the Chambersburg Engineering Company, Chambersburg, Pa., for a 12½-foot riveter, 54-inch flanging press, together with pumps and accumulators and a heavy hydraulic crane; Manning, Maxwell & Moore, Chicago, two Hilles & Jones punchers and shears and a No. 3 Hilles & Jones punch and stake riveter.

A. Finkel & Sons Company has bought from A. M. Castle & Co. a 5-pound steam hammer.

F. G. Fernstein, Menominee, Mich., has bought from Manning, Maxwell & Moore an equipment, including a Hilles & Jones angle shear, a heavy punch and shear made by the same firm and five 34-inch and four 42-inch Barnes drills.

Hill, Clarke & Co., Chicago, have sold to the Grand Crossing Tack Company a heavy 30-inch draw cut shaper with special rotary chucking attachment.

Municipal and Power Work.

The city of Appleton, Wis., is having plans drawn by George W. Sturtevant, Fisher Building, Chicago, for a water works plant to cost \$250,000. The original intention was to utilize existing water power, but legal obstacles having arisen the plant is being tentatively changed to a steam power proposition.

The city of Chicago has been restrained by an injunction from awarding contracts as the result of bids received on four internally fired boilers for the Sixty-eighth street pumping station, four internally fired boilers for the Harrison street pumping station, and for the superstructure of the North Avenue bridge. Bids are in and as soon as the law department has disposed of the injunction contracts will be let. The \$400 tons of cast iron pipe of various sizes bought by the city of Chicago from the United States Cast Iron Pipe & Foundry Company last week was awarded at \$27.35 a gross ton, delivered.

The Commissioner of Public Works, Chicago, is advertising for bids to close April 26 for one compound condensing crank and fly wheel pumping engine, 3,000,000 gallons capacity against a head of 150 feet, and two horizontal return tubular boilers with necessary appurtenances, both engines and boilers to be for the Washington Heights pumping station.

Press reports state that a company to be known as the Michigan Electric Company is being formed at Mishawaka, Ind., to take over and operate the various water powers erected on the St. Joseph River in Indiana and Michigan. Dams have been built or are building at Buchanan, Berrien Springs and Bristol, Mich., and Mishawaka, Constantine, Elkhart, Mottville and State Line, Ind. Statement is made that this company will control over 60,000 electrical horsepower and that equipment will be installed for transferring this power to Elkhart, South Bend, Mishawaka, Niles, Dowagiac and other manufacturing centers tributary.

The city of De Pere, Wis., will receive bids May 5 for improvements to the water works plant, including cast iron mains, elevated tanks, reservoirs, suction gas producers, pump, power houses, &c. W. G. Kirchoffer, Madison, Wis., is consulting engineer.

The following equipment is required for a new electric light plant at Hope, Ind., being built by George S. Cook: Two boilers, 125 horse-power each; one engine, 125 horse-power, Corliss type; one 80-kw. Akron generator; ten arc lights; 1000 incandescent lights. Contract for the erection of this plant was recently let to the Ryan Electrical Construction Company, Indianapolis.

The Frank C. Patten Company, Sycamore, Ill., which is enlarging its factory for the manufacture of agricultural machinery, is in the market for one 60-inch by 16-foot tubular boiler, a 75 horse-power direct connected horizontal engine

with 250-volt direct current motor and one 40 horse-power 220-volt motor.

The following important contracts have been let for the construction of Sears, Roebuck & Co.'s new plant in Chicago: Eight 500 horse-power horizontal Caball water tube boilers, Aultman, Taylor & Co., Mansfield, Ohio; five engines, aggregating 5250 horse-power, Allis-Chalmers Company, Milwaukee; Bullock generators, aggregating 4200 kw., to the same firm; two high speed engines (one 500 horse-power and one 250 horse-power), Ames Engine Works; 20 passenger and freight elevators, Otis Elevator Company, Chicago; plumbing, E. Baggott & Co., Chicago; coal conveying system, Link-Belt Machinery Company; 30-ton crane for power house, Whiting Foundry Equipment Company. Contracts are not yet placed for heating, ventilating, wiring, piping, sprinkler system, merchandise conveyors, pneumatic tubes or spiral merchandise chutes.

Philadelphia Machinery Market.

PHILADELPHIA, Pa., April 11, 1905.

There has been more or less of a lull in the machinery market during the past week, the inactivity being probably more noticeable among merchants than manufacturers, the demand for immediate delivery on standard tools of the medium and light class having been particularly quiet. Manufacturers of special tools and heavy standard tools have, however, had a fair week's trade, and while the orders have not been large they have been generally satisfactory. The trade, on the whole, is by no means discouraged by the present inactivity, which it is expected will be but of short duration and will enable some who have already begun to get pretty well back on deliveries to catch up slightly on the orders already in hand.

Railroad business comes out but slowly, a strong tendency being apparent to defer purchases at the time. Specifications for the further requirements of the Pennsylvania and the Erie railroads are being anxiously awaited by the trade, while considerable interest is being taken in the proposals for tools for the Isthmian Canal Commission, bids for which must be made by May 1, purchases at which time will include machinery, drills, lathes, tools, saws, steam hammers, boring mills, planers, pneumatic machinery, &c.

Inquiries have been as numerous as ever, but as a rule do not close up as rapidly as desired, most of the business which has been closed being that which has been under consideration for a more or less greater length of time.

Boiler and engine manufacturers report a somewhat more satisfactory condition of business. At this season of the year work which has been delayed by winter comes before the trade and usually closes up quite promptly; quite considerable business of this nature has been transacted during the past few weeks.

Of the foundries those making steel castings are probably the more active; gray iron casting plants are in some cases quite busy, but there is no rush of orders, a good day-to-day business, however, being taken. On some grades of castings prices have become a trifle firmer, but on ordinary grades they remain unchanged.

The city of Philadelphia is advertising for bids for building a new ice and fire boat (with privilege of ordering two), together with all the necessary pumps, machinery, &c., complete. Specifications, plans and all information, together with blank forms, may be procured from the Director of Public Works, Room 216, City Hall. Bids will be received until Tuesday, April 18, 1905, at 12 o'clock noon.

The Philadelphia & Reading Railroad officials have under consideration the question of building steel coal barges in the future in adding to their present coal fleet. In order to get an idea of the cost of such barges and to enable the officials to ascertain the relative cost of maintenance, estimates have been asked from various builders.

The Espen-Lucas Machine Works has taken a number of good orders for cold saw cutting off machines, including several for export to Canada. Considerable work has also been received on parts of Franklin and Keystone cold saws, the patterns of which were purchased by it when those firms went out of business. It keeps quite busy in its various departments and has shipped recently quite a number of tools, including one 40-inch and one 28-inch high speed steel foundry saw and a large bar cutting machine to parties on the Pacific Coast.

I. H. Johnson, Jr., Company, Incorporated, reports a very satisfactory condition of business. A good demand for lathes, both heavy and medium size, continues, and orders have been taken for a considerable quantity. This company has recently shipped a number of heavy tools to steel works both in this vicinity and the Middle West, and is very much encouraged as to future business.

Wickes Bros. through their local office have transacted a very satisfactory business. Some large propositions are about ready to close, while a 100 horse-power Wickes high pressure horizontal return tubular boiler has been furnished the Lenni Silk Mills, Lenni, Pa. A complete 10-kw. direct

connected electric lighting plant has also been furnished local parties, to be installed in one of the river line of steam-boats.

The Baldwin Locomotive Works has shipped the Swedish Government a Westinghouse-Baldwin electric engine for use on the Government railway system. This engine was equipped with two 150 horse-power motors and will be experimented with in view of supplanting steam locomotives on their various roads.

Cincinnati Machinery Market.

CINCINNATI, OHIO, April 11, 1905.

The past week among machine tool builders has been fairly active, with all the shops running full time with a normal output. Most of these plants have their order books in good condition and this alone enables them to run to their full capacity. Apparently new orders during the week were not so generally received as has been the case recently, but this is without significance, as the business is in a sense of a more or less spasmodic character. Foreign inquiry still keeps growing and it is anticipated will reach the proportions of a year or two since. There is some complaint as regards the castings situation, the difficulty being that in many cases those obtainable are too hard, and are not nearly so satisfactory since the recent trouble with the molders. The fact that during this strike a number of machine tool builders were compelled to secure castings from out of town points has had the effect of causing several new plants of this kind to spring up, and with this added equipment it is hoped that in a short time all of this annoyance and delay will disappear. Certain builders of tools are also complaining of prices being shaded in their particular lines, which under present conditions they deem unnecessary and unwise, as present prices are readily obtainable.

Cincinnati machine tool men are to be well represented at the meeting of the National Machine Tool Builders' Association in Washington this week. Messrs. Lodge and Shipley will both attend, as will also Mr. March of the Cincinnati Shaper Company, Mr. Gingrich of Cincinnati Milling Machine Company, and 10 or 12 other members of the different plants. Robert Wuest of the National Metal Trades will also be present in the interest of his association.

Some weeks since we made mention that the Industrial Bureau of the city was in negotiations with several parties looking to the locating of several large iron and steel industries here. Up to the present writing they have been unable to close with the first mentioned concern for reasons that are unknown, but in the meantime two other concerns of this kind have come forward and offered to locate here if satisfactory arrangements could be made. In the event of the original proposition being sidetracked negotiations will be continued with these latter parties and a definite conclusion reached. It is very apparent from the manner that outside capital is turning toward this city that they realize the splendid facilities for growth in this location, and equally true that Cincinnati consumers are determined to secure a steel castings plant that will be readily accessible.

The bureau is also in correspondence with the Niles people of Hamilton, endeavoring to induce them to locate in this vicinity should they deem it expedient to remove from their present location. As was fully detailed in *The Iron Age* some weeks since, this company had made overtures to the Council of the city of Hamilton looking toward condemning the street directly in the rear of the plant, in order that it might enlarge its shop by the erection of additional modern structures. After much delay the City Council viewed the matter in a favorable manner and agreed to the proposition. Now the court has come on the scene and has enjoined the condemnation proceedings, and there the matter rests. Just what the Niles people will decide to do under these conditions is not yet made public, and the Industrial Bureau, recognizing the value of having such a plant in this vicinity, is prepared to make them propositions that cannot be excelled should they decide to make a change in location.

The strike of the architectural men is still on and construction of this class is at a standstill. The iron men are determined that they will deal with but one union, and as the men belong to two unions, one consisting of outside and the other of inside men, matters are not progressing very rapidly. A proposition was submitted to the workers agreeing to last year's schedule of prices, which was refused and an advance demanded. Both sides are firm in the stand taken and it is feared that it will be a prolonged affair.

The Cincinnati Shaper Company says that the demand seems to be for more motor drives in the line of smaller shapers. It is shipping to the Bethlehem Steel Company 16 shapers, consisting of 16 and 24 inch high duty machines. In addition to the line of shapers, the company is building grinders and has four large traverse machines completed ready for shipment to William Morten, Jr., & Co., Philadelphia, Pa. A heavy run of business has been experienced for some time and its output has been practically disposed of for some weeks to come.

The Loveland Foundry Company, a new concern recently

incorporated, will be ready for operations this week. Mr. Donnelly, the president, states that the company is receiving a fair recognition and that it expects to be in a position shortly to turn out first-class work on short notice. It will manufacture a small line of gray castings and will cater to the machine tool builders' needs.

The Bollman-Wilson Foundry Company reports a moderate run of business, with a melt daily of perhaps one-half of its capacity. C. M. Laue, under whose name this plant was conducted for many years, has sold out his interests to Messrs. Bollman and Wilson, and retires from the firm after 58 years of active service. He has gone to Cuba, where he will remain for a time looking after several investments.

The Bickford Drill & Tool Company expects to have a new radial and two new multiple drills in the market some time during the summer. The company reports that it is busy with standard work, with the railroads becoming an important factor in its branch of trade. Small orders are being received in fair numbers, with export trade good.

The John Steptoe Shaper Company has ready for shipment three 16-inch shapers for London, two 32-inch, one 28-inch and two 16-inch for Belgium; one 16-inch for Stockholm, Sweden, and three 16-inch for Japan, via San Francisco, and two 16-inch via New York for the same point. During all the time when builders were complaining of dull times this firm kept up to normal and now is having an extraordinary demand for its tools.

The Fosdick Machine Tool Company says that business is splendid. Especially is this true with foreign demand which is growing rapidly. The company has for shipment to France one horizontal boring and drilling machine and seven 5-foot radials. It has recently started the manufacture of standard lathes and is now putting on the market a new 16-inch pattern. To carry on this expansion it will be necessary to increase its working force at least 10 per cent.

The Cincinnati Milling Machine Company's new building is being hurried forward in as rapid a manner as possible. Trade is very active, and its tools are finding a ready sale throughout this country as well as across the sea.

The Potthoff & Frey Iron Company reports structural demand on the increase. The company has found it necessary to add to its plant and to this end has secured a building permit for the erection of a two-story building to be of iron and steel construction, to cost about \$18,000, immediately adjoining the present plant.

Cleveland Machinery Market.

CLEVELAND, OHIO, April 11, 1905.

Machinery dealers say that business continues to improve, there being a good general run of business, with few large orders being placed or big deals in sight. Labor troubles which have been delaying some building operations have been settled and work is progressing smoothly. Several large fires in this city lately have brought hurry orders to dealers for machinery and building material, and in the near future they will mean orders for additional new machinery. The opening of spring finds many new electric railway projects in this district ready to commence work and some good orders have recently been placed for cars, machine shop and power house equipment. Another industry which seems to be booming is the manufacture of concrete building material, cement and cement machinery. Several recent developments in these lines are mentioned in this column. Considerable large railroad work is in sight, and announcements are being made of improvements and additional shop equipments at several points in this State. Some machinery will probably be required by the C. O. Bartlett & Snow Company, whose plant was badly damaged by fire last night. The company manufactures hoisting and conveying machinery, and has been making a specialty of cement and concrete plants during the past few months, having a very large amount of this class of work under contract. Mr. Bartlett stated to *The Iron Age* that the loss was about \$60,000, fully insured. He has secured the use of neighboring shops and machinery and work on orders will start at once.

The Hussey Drop Forge & Mfg. Company, whose plant was damaged by fire last week, has erected a temporary roof over its buildings, which have been cleared, and work of rebuilding is now progressing while manufacturing goes on. The company's steam hammers were not seriously injured, but to catch up with work the company secured immediate delivery of an 800-pound and an 1800-pound Bement-Miles steam hammer and a large upsetting machine built by the Ajax Mfg. Company, this city, and these are now in operation. This brings the company's hammer equipment up to nine large machines.

The Machinery Forging Company, whose shop was completely destroyed two weeks ago, is doing some work in temporary quarters. A steel frame and sheet iron building, 70 x 150 feet, is now being erected and will be completed in about a week. The forging machinery was not seriously injured, but the machine shop equipment, including lathes,

shapers, boring mills, &c., was badly wrecked. The insurance on these has not yet been adjusted, so that the company is not yet in position to order new tools. A large gas engine will be installed for power.

The Cleveland Twist Drill Company will erect a large three-story brick and concrete building adjoining its present plant at Lake and Kirtland streets. The building will be used for a forge shop and machine shop and the equipment will be moved from the present forge shop. It is probable that some new machinery will be installed.

The W. W. Sly Mfg. Company, manufacturer of foundry specialties, has completed plans for a new building, which will be 60 x 235 feet, two stories high, of steel, iron and concrete construction. The building will be used for machine shop and foundry. The company has a good equipment of machine tools, and is not on the market for any immediate increase of equipment, although it probably will be a little later. New engine and boiler will be installed.

The National Iron & Wire Company has the contract for structural work for a five-story building for Wickens & Ramson, Lorain, Ohio. The same company is furnishing structural work for a forge shop for the Machinery Forging Company, a machinery building for Case School of Applied Science, and several buildings for the Standard Brewing Company, all of Cleveland.

The Gendron Wheel Company, Toledo, is having plans prepared for a \$30,000 addition to its plant. The company manufactures bicycles, velocipedes, toys and hardware specialties.

Robert C. Gotwald, architect, at Springfield, Ohio, is preparing plans for large repair shops to be erected at Jackson, Ohio, for the Detroit Southern Railway. Receiver Hunt of the railroad company is not yet prepared to state what machinery will be required for the shops, but it is understood that the facilities will be largely increased.

The Toledo & Ohio Central Railroad Company, with general offices at Columbus, is preparing plans for additions to its shops at Bucyrus, Ohio.

The Van Buren, Heck & Marvin Company, Findlay, Ohio, manufacturer of ditching machines, has recently closed contracts for nearly \$50,000 worth of its machines. The company is now erecting a large foundry and it is considering making other improvements.

The McKaskey Register Company, Alliance, Ohio, manufacturer of registers, has decided to erect an addition 63 x 120 feet.

The Municipal Association of Fremont, Ohio, has secured the location for the plant of the Conway Stove Company, organized a short time ago. The company will erect a stove plant to cost between \$35,000 and \$40,000.

The Globe Mfg. Company, Painesville, Ohio, has moved into large, new quarters and it is planning to install considerable new machinery to increase its facilities.

The American Fork & Hoe Company, Cleveland, is preparing to make important improvements to its Geneva Tool Works, at Geneva, Ohio.

The Toledo-Massillon Bridge Company, Toledo, has been incorporated with \$250,000 capital stock by C. A. Peckham, T. H. Tracy, J. J. Swigart, C. A. Draper and Charles S. Davis. The company will erect a large bridge manufacturing plant.

The Ashtabula Concrete Construction Company, Ashtabula, Ohio, has been formed, and it will erect and equip a plant. W. J. Humphrey is general manager of the company.

The Lake Erie Cement & Construction Company, Norwalk, Ohio, which has heretofore operated a plant at Milan, Ohio, will erect a plant for the manufacture of concrete blocks at Huron, Ohio. Aside from the concrete business it will erect machinery for the moisting, sieving and assorting of sand.

The shop employees of the Crocker-Wheeler Company, Ampere, N. J., have organized a beneficial association which has a number of novel features. Every employee who pays 10 cents a week to the association will be entitled to \$10 a week for 20 weeks during incapacity through illness. If he dies his family will receive \$100. The payment of 20, 30 or 40 cents a week entitles him to \$15, \$20 or \$25 respectively, with death benefits of \$150, \$200 or \$250. The plan went into effect April 3. The company has offered to contribute an amount equal to the dues paid to the association. The president of the Crocker-Wheeler Beneficial Association is James Moore, who has charge of one of the planers in the main bay of the shops. The other officers are Chas. H. Brittain, vice-president; Geo. T. Owen, financial secretary; Fred'k Maines, recording secretary, and Wm. Lennox, treasurer.

The United States Steel Corporation has ordered the construction of 800 additional coke ovens in the Pocahontas field.

Government Purchases.

WASHINGTON, D. C., April 11, 1905.

The Isthmian Canal Commission has prepared the general specifications for the steam shovels for use on the isthmus. The shovels are not to be more than 100 tons in weight and should have a loading capacity of from 4000 to 6000 cubic yards per day. The commission is also about to call for bids for three unloading machines, three unloading plows and three earth spreaders, all to be of similar dimensions to those purchased some time ago. Among the present requirements, bids for which will soon be asked, are a portable stone crusher of from 40 to 50 cubic yards capacity, one 10-ton steam road roller and one 12 to 13 ton steam road roller.

The Bureau of Supplies and Accounts, Navy Department, will receive bids until May 9 for a quantity of supplies for the Mare Island and Puget Sound navy yards, including motors, &c.

Proposals will be received at the Bureau of Supplies and Accounts, Navy Department, until May 16 for the following machine tools for the Mare Island and Puget Sound navy yards: Schedule 154—Dovetailing machine, punches, planer, milling machine, pipe expander and flanging machine. Schedule 155—Drill press, crank shaper and lathe.

The Bureau of Yards and Docks, Navy Department, has prepared specifications upon which bids will be invited for the construction of a concrete reservoir and the installation of a water distributing system at the naval station, Guantánamo, Cuba.

The Bureau of Supplies and Accounts, Navy Department, will receive bids until May 2 for the following machine tools for the Portsmouth, New York, Norfolk and Pensacola navy yards: Schedule 146, sand belt machine; schedule 147, emery grinders, saw mill outfit, planer, scarfing machine; schedule 148, fire pumps, &c.

The following bids were opened April 1 for three electric traveling cranes for the Portsmouth Navy Yard:

North Penn Iron Company, Philadelphia, Pa., item 1, \$4964; 2, \$1994; 3, \$3449.

Northern Engineering Works, Detroit, Mich., item 1, \$5245; 2, \$2190; 3, \$3740.

Manning, Maxwell & Moore, New York, item 2, \$2601 and \$2600; 3, \$4830; 4, \$4158.

Whiting Foundry Equipment Company, Chicago, Ill., item 1, \$6175; 2, \$2450; 3, \$4585.

The Case Mfg. Company, Columbus, Ohio, item 2, \$2175; 3, \$3960.

Niles-Bement-Pond Company, New York, item 1, \$7355 and \$5550; 2, \$2975 and \$2250; 3, \$5165 and \$3900.

The American & British Mfg. Company, Bridgeport, Conn., has been awarded the contract to supply the Navy Department with 86 3-inch guns at the rate of \$4333 per gun. This is said to be the largest order for ordnance ever given out by the Navy Department.

Under bids opened March 14 for supplies for the navy yards the Oliver Machinery Company, Grand Rapids, Mich., was awarded class 6, schedule 84, one heavy rip saw table, \$660, and under schedule 86 the Rockwell Engineering Company, New York, was awarded class 9, one rotary melting furnace, \$1955.

Henshaw-Bulkley Company, San Francisco, Cal., was awarded class 10, schedule 96, one 14-inch sand belt machine, motor driven, \$630, under bids opened March 28, for supplies for the Mare Island Navy Yard.

The Building Trades Employers' Association of New York on Tuesday appointed a committee to look into the advisability of building a \$1,000,000 home for the organization and elected the following officers to serve for the ensuing year: President, William H. McCord of the Iron League; first vice-president, Lewis Harding, Master Carpenter Association; second vice-president, Charles A. Cowen, Mason Builders' Association; treasurer, Paul Starrett, president of the George A. Fuller Company; secretary, P. K. Stephenson; chairman of the Board of Governors, James R. Strong, Electrical Contractors' Association.

The Buffalo Dredging Company has begun work on a huge ore bin at South Buffalo for the Pennsylvania Railroad. The bin will be on the north side of the union ship canal which was opened at South Buffalo on April 10. The length of the bin is 1000 feet; width, 200 feet; depth, 20 feet, and the cost will be about \$500,000. By excavating to a depth of 20 feet rock bottom is found. The walls will be concrete. The contract specifies completion of the bin by December 1 next.

W. R. Woodford, vice-president of the Pittsburgh Coal Company, states there is no truth in the report that the Berwind-White Coal Company has absorbed or would absorb the Pittsburgh Coal Company.

Trade Publications.

Adams-Farwell Motor Car.—The Adams Company, Dubuque, Iowa, has issued a very complete catalogue of the Adams-Farwell motor car, which was described in *The Iron Age* of November 3, 1904. It will be recalled that this motor car differs radically from the ordinary type in that its cylinders revolve instead of the crank shaft. In view of this fact the company in preparing its catalogue has made it a carefully detailed discussion of the mechanism, illustrated by numerous diagrams and engravings. A radical feature that is described in careful detail is the method of reducing speeds by means of a combined planetary and slide gear transmission which will permit the use of the full speed and efficiency of the engine even when the slowest speed of the car is utilized in climbing steep or sandy hills. The use of two intermediate gears on the Adams-Farwell motor permits of four speeds forward and four speeds backward and of a change from any one to another of the speeds without going through intermediate steps. The catalogue is in many ways a model of technical literature, and though it may look somewhat formidable to the layman at the start, the use of popular language and the unusual clearness of the illustrations will make it possible for the man of no mechanical experience or education to study and understand the entire mechanism of the car. A trade-mark appearing at the top corner of each page consists of the cross section of the three cylinders, accompanied by the words, "It spins like a top." A very valuable feature of the catalogue not only to owners of the Adams car but to men in charge of gasoline motors in general is entitled "Cause and effect rules or suggestions in case of trouble." Almost every contingency is covered by these rules, which seek to make clear the cause for every effect and to explain the effect of every cause, with remedies in case of trouble. The book is more a book of instruction than a selling catalogue. It is entitled "A Study of the Adams-Farwell Motor Car."

Machinery for Iron, Steel and Tube Works.—The United Engineering & Foundry Company, Pittsburgh, Pa., has made quite a departure from ordinary catalogues in issuing a remarkably attractive booklet containing illustrations of machinery which that company has recently furnished to such important manufacturers as the Illinois Steel Company, the Dominion Iron & Steel Company, the Seamless Tube Company of America, the Reliance Tube Company, Limited; Spang, Chalfant & Co., the National Tube Company, the Allegheny Steel & Iron Company, the Inland Steel Company, the Lackawanna Steel Company, the Wheeling Steel & Iron Company, the Youngstown Iron Sheet & Tube Company and others. The illustrations are small but exceedingly well executed and are not accompanied by any descriptive matter except the name of the machine. The brochure is of such a suggestive character that it cannot fail to enlist the attention of all into whose hands it may fall.

Sturtevant Generating Sets.—The rapid advance of the B. F. Sturtevant Company, Boston, Mass., in the electrical field has been noticeable and is particularly marked at this time by the issue of bulletin No. 63, showing various types and sizes of generating sets. These range from 3 to 100 kw. in output, the smallest size being driven by a $3\frac{1}{2} \times 3$ vertical engine and the largest by a 14×14 horizontal center crank engine. A separate series, ranging from $7\frac{1}{2}$ to 100 kw., is equipped with vertical compound engines. All the types of Sturtevant engines illustrated are completely inclosed and arranged with watershed partitions to prevent the water from the piston rod stuffing box reaching the interior of the frame. The interior bearings are supplied with oil under a system of forced lubrication, thereby securing a mechanical efficiency considerably in excess of 90 per cent. Many of these sets have been designed to meet the rigid specifications of the Navy Department, and their successful passage through the inspectors' hands appears to be the best evidence of the standard which is being maintained by the company.

Corrugated Bars for Reinforced Concrete.—The rapidly increasing use of reinforced concrete construction renders particularly interesting an attractively printed publication which has just been issued by the St. Louis Expanded Metal Fire Proofing Company, 606 Century Building, St. Louis, Mo. In the introductory pages reference is made to a new type of corrugated bar having a constant cross section which has been patented by the company. At the same time the old style bar, it is said, will continue to be manufactured, both kinds being turned out in soft, medium or high carbon steel. In connection with the corrugated bar the claim is made that it has the following vital points of advantage over plain bars and over other types of bar reinforcement. Its elastic limit being high enables a higher working stress to be used than should be used for soft steel bars, taking, therefore, proportionally less metal; cracks in the concrete cannot penetrate to the corrugated bar so long as the stress in the steel is inside the elastic limit; soaking in water concrete reinforced with corrugated bars does not injure their bond; reduction of the cross section of the bars due to tension stress inside the elastic limit in no way reduces their effective grip on the concrete; vibration and shocks do not impair their bonding value, and being formed of rolls while hot the bars are all alike, the shape of each piece not depending upon the personal equation of some workman. Much interesting data showing a comparison of cost of single footings, and also of double or combined footings, are presented; also com-

ments regarding continuous walls, reinforced concrete beams and floor panels, together with numerous tables showing strength of materials and for designing highway culvert covers in reinforced concrete construction with corrugated bars. The illustrations are for the most part direct reproductions of photographs of work in connection with which reinforced concrete has been employed.

Filtration and Water Softening.—Greer Filter Company, Perry Building, Philadelphia, Pa. Two illustrated catalogues, each 6 x 9 inches. The first deals with filtration and contains 47 pages, and the second with soft water and contains 56 pages. The filtration catalogue illustrates a number of installations of filter plants made by this company. Taking it for granted that the advantages of filtration are well appreciated, the book enters into a discussion of filtration plants, and contains much in the way of instructive matter on this subject. The typical plans of installations will be found of special value to the engineer. Besides large industrial and municipal plants attention is given to small equipments for home supplies. The second pamphlet, entitled "Soft Water," in an equally interesting way deals with the treatment of water to make it fit for manufacturing and domestic purposes. A description is given of the largest water softening plant in the world, which was installed by the Tennessee Coal, Iron & Railroad Company, Ensley, Ala. A large number of other water softening plants are illustrated.

Pneumatic Siphon Hydrants.—Horace See, 1 Broadway, New York City. Circular giving a description and sectional view of the pneumatic siphon hydrant, claims for which are that it avoids freezing, vibration, water hammer and wrecking of pipes, and increases the capacity, pressure, strength and reliability.

Engine Test.—Watertown Engine Company, Watertown, N. Y. Report of a test on a Watertown single valve engine made to chief engineer, Bureau of Filtration, Philadelphia, Pa., and gives the results of the test in tabular form. It is accompanied with a half-tone engraving of an engine of the type tested.

Separators.—Harrison Safety Boiler Works, Philadelphia, Pa. Catalogue No. 15. Size 6 x $7\frac{1}{2}$ inches. Pages 190. Deals with Cochrane separators for live steam, exhaust steam, compressed air, ammonia gases, &c. Describes the separators and gives much concerning uses of the different types. Also refers to the length of time that they have been in service and the number that are now in use and where. The principle of the separator and its design are discussed and interesting data from tests included. Each of the different kinds is taken up separately, and numerous engravings show exterior and sectional views, while diagrams illustrate the action. Complete tables give the types and dimensions of various sizes. The catalogue covers the subject very comprehensively and will be of considerable value to those contemplating the installation of separators.

Engines and Rolling Mill Machinery.—Mesta Machine Company, Pittsburgh, Pa. Catalogue B. Cloth, size 9 x 12 inches; pages 120. The fore part of the catalogue is devoted to a description of the company's plant and illustrated with numerous half-tone engravings showing exterior views and the interior of the various departments. Another part deals with engines built by this firm, each type being shown with a full page illustration. These include horizontal, simple, tandem compound and cross compound and vertical cross compound Corliss engines, horizontal vertical compound engines, geared and direct connected reversing engines, horizontal cross compound, vertical disconnected compound and vertical cross compound blowing engines, long cross head vertical blowing engines with high pressure steam cylinders, and the same with low pressure steam cylinders. Views of special installations show five vertical cross compound blowing engines built for the Donora works of the Carnegie Steel Company, one of five horizontal cross compound blowing engines built for the South works of the Illinois Steel Company, five of 18 long cross head blowing engines built for the Ensley plant of the Tennessee Coal, Iron & Railroad Company, and a 28 x 48 inch Corliss engine and a machine molded gear drive for two trains of cold rolls built for the Standard Tin Plate Company. The next section of the book concerns rolling mill machinery, including blooming and slabbing, plate and universal, structural, rail and merchant bar mills; electric, hydraulic and steam shears; sheet and tin plate machinery, steel, sand and chilled rolls, roll lathes, &c. Among the special equipments referred to is the 40-inch slabbing mill and piston valve reversing engines built for the National Tube Company and described in *The Iron Age* of September 29, 1904. The latter part of the catalogue deals with and shows all kinds of machine molded gears. Tables of useful information are appended.

Power Presses.—Consolidated Press & Tool Company, 96 North Clinton street, Chicago, Ill. Bulletin No. 3. Illustrates and describes the various presses made by this company, including heavy power presses, open front presses with combined wiring and horning bolster, straight sided presses, open back presses, long stroke presses with adjustable tables, horning and wiring presses, inclinable double crank presses, gang press, small power presses for mounting on bench or iron stand, automatic curling machine for tin balls and automatic printing, numbering and counting machine.

The Cort Memorial Unveiled.

A description was recently printed in *The Iron Age* of the bronze tablet presented by Charles H. Morgan, Worcester, Mass., in memory of Henry Cort, the inventor of grooved rolls and puddling. Following is a report of the unveiling of the tablet taken from the *London Iron and Coal Trades Review* for March 10:

An interesting ceremony took place at Hampstead Parish Church yesterday (Thursday), when a bronze memorial to Henry Cort, the inventor of the processes of puddling iron with mineral coal and the rolling of metals in grooves, was unveiled by Mr. Benn, the chairman of the London County Council. The memorial is in the porch of the church, and the remains of the inventor lie in the adjoining graveyard.

Among those present at the ceremony were Sir Alexander Binnie, representing the Royal Institution of Civil Engineers; Nicholas West, Society of Engineers; Sir H. Trueman Wood, Society of Arts; Prof. W. Gowland, professor of metallurgy at the Royal School of Mines; Edward Worthington, B.A., secretary of the Institution of Mechanical Engineers; C. McDermid, secretary of the Institution of Mining and Metallurgy; Bennett H. Brough, secretary of the Iron and Steel Institute; A. S. E. Ackermann, president of the Civil and Mechanical Engineers, and the Rev. Canon Bonney. After a service in the church the company adjourned to the porch.

Joseph Phillips Bedson, M.I.C.E., M.I.M.E., in asking Mr. Benn to unveil the memorial, said he was privileged by the donor, an eminent American engineer, who desired to withhold his name, to act on his behalf. The donor desired to perpetuate the name of Henry Cort, and was giving a replica of the Hampstead memorial to the Parish Church at Lancaster, where the inventor was born in 1740. Little or nothing was known of Cort's parentage or of his history in the interval between his birth and 1765, when he established himself as a navy agent in Surrey street, Strand. His knowledge of the requirements of iron for the navy brought him into close contact with the iron industry. At that time the iron used in the navy was procured from Russia and Sweden, and duties were imposed which enhanced the price. This set Cort thinking, with the result that in 1783 he took out the first patent for rolling metals in grooved rolls and in the following year the first patent for puddling with mineral coal. In 1787 Crawshaw's were turning out 500 tons of bar iron per annum; 25 years afterward under the Cort patents they were making 10,000 tons per annum, and should have paid a royalty to Cort of 10 shillings per ton.

Cort, by his rolling in grooved rolls and puddling, was the first to produce bar iron continuously, persistently and profitably. He spent £20,000, the savings from his navy agency, in establishing and perfecting iron works at Fontley, Fareham, in Hampshire. His navy agency brought him into close contact with Adam Jellicoe, chief clerk to the paymaster and treasurer of the navy, and when he wanted financial assistance he applied in that quarter, with the result that Jellicoe put up £27,000, for which he was to have a half share in the profits. The Navy Commissioners were privy to this arrangement. In 1789 all was going well with Cort, but Jellicoe died suddenly on August 30 and was found to be a defaulter to the navy funds to the extent of £39,676. Jellicoe's property was seized, and with it the deed of partnership between him and Cort and other joint property. Altogether about £250,000 was absolutely sacrificed. To shelter others implicated in the navy department all the papers were burnt, thus leaving Cort without a shred of security or evidence as to his patents, royalties, &c.

Cort became a ruined man. In 1791 he applied to the Commissioners of the Navy, but could obtain no redress, and the licensees under the patents were relieved of all royalties due to Cort. In fact, the iron works were encouraged to use Cort's methods without let or hindrance. In 1884 the high water mark of puddling iron was reached, there being 4577 furnaces at work in Great Britain, making 2,800,000 tons of puddled iron per annum, while the world's make was 8,750,000 tons,

all puddled and rolled by Cort's original inventions. Surely the man who did so much should have a large niche in his country's hall of fame; but little had been done to perpetuate his memory, and there could be no doubt that he died a broken-hearted man.

Mr. Benn having unveiled the memorial the proceedings terminated.

Regulations for Use of Liquid Fuel.

WASHINGTON, D. C., April 11, 1905.—The Department of Commerce and Labor has prepared a series of regulations for the use of petroleum as fuel for motive power on vessels subject to the Federal navigation laws. The regulations are of interest to builders of steam vessels, engines, boilers and motive power appliances of all kinds and are based upon the recent enactments of Congress.

Referring to the provisions of section 4474, Revised Statutes, authorizing the Secretary of Commerce and Labor to grant permission to the owner of any steam vessel to use petroleum or other mineral oils or substances in the production of motive power, attention is called to the fact that such authority is conditioned upon the requirement that "no such permission shall be granted unless upon the certificate of the supervising inspector of steamboats for the district wherein such vessel is registered and other satisfactory proof that the use of the same is safe and efficient."

In pursuance of this section supervising inspectors are instructed by the Department to take all proper precautions before making the certificate provided for in this section, and in particular (a) To carefully examine personally, when such examination is reasonably practicable, the oil burning plants and equipments of steamers applying for permission to use petroleum under said section; and (b) When such personal examination by the supervising inspector is not reasonably practicable, the said inspector shall make personal examination of the blue prints or designs showing the nature and construction of said plant and equipment, and shall also require from one of the local inspectors in the district a certificate that the said plant and equipment are safe and efficient, and that the said local inspector has made such certificate after careful personal examination of the said plant and equipment.

The statute also requires "other satisfactory proof" in addition to the certificate of the supervising inspector aforesaid, and every such certificate of the supervising inspector to the Department should therefore include the certificates of two responsible persons known to be experts in the installation of such oil burning plants and equipments on steamers.

The Department has prescribed forms for the application and certificates above required, which will be supplied by the Supervising Inspector-General of the Steamboat Inspection Service. Applicants are required to state the measurement in gross tons, length over all, beam, depth of hold and character of service of the vessels which it is proposed to equip. A blue print must also be inclosed showing the location of all oil tanks. The certificate of experts required under the new regulations must be in the following form:

The undersigned, experts in the installation of fuel oil burning plants on steam vessels, do hereby certify that, in our opinion, the method of burning petroleum oil, location of fuel tanks or bunkers, method of ventilation, piping and furnace arrangements on the steamer ——— are safe and efficient for the purpose intended.

The inspector is required to certify that, having made a personal examination of the steamer and having found the arrangements for burning petroleum as fuel to be exactly as described in the blue print, the arrangements, in his opinion, are safe and efficient for the purpose. In case this certificate is made by a local inspector, the new regulations require that the Supervising Inspector must indorse it before forwarding it to the Department. The regulations further require that applicants for oil burning permits for steamers distant from the home or the port of the officer who is to make the examination of plan and equipment shall pay the mileage expenses of such inspector.

W. L. C.

Iron and Industrial Stocks.

NEW YORK, April 12, 1905.

The past week was marked by the attainment of new high records on some of the leading industrials. United States Steel preferred touched 103 on Friday, which passed the previous high record of 101½ attained April 30, 1901. Locomotive preferred sold up to 119 on Tuesday of this week; the common on the same day sold up to 57, which marks the highest price at which it has yet been sold. Can preferred also sold up to 74 on Tuesday, which is a new high record for this movement. The Southern group showed some recessions from recent high prices, due to the fact that the negotiations for consolidation have been changed into a different channel. Tennessee Coal, which sold at 104¾ on Thursday of last week, declined to 98¾ on Saturday; Sloss-Sheffield common in the same time declined from 97½ to 91¼; Republic preferred declined from 83¾ to 80. The other iron and steel stocks were steady throughout the greater part of the week, with the exception of Colorado Fuel, which declined from 56½ on Thursday to 52½ on Tuesday of this week. Last transactions in active stocks up to 1.30 p.m. to-day were made at the following prices: Can common 12¾, preferred 71½; Car & Foundry common 40, preferred 101½; Locomotive common 58½, preferred 120¾; Colorado Fuel 52¾; Pressed Steel common 41¾, preferred 97½; Railway Spring common 35¾, preferred 98½; Republic Iron & Steel common 21¾, preferred 80½; Sloss-Sheffield common 92, preferred 125; Tennessee Coal 98¾; United States Steel common 36¾, preferred 101, new 5's 97¼.

The general balance sheet of the Canadian Westinghouse Electric & Mfg. Company as of December 31, 1904, is as follows: Assets—Cash, \$495,728; accounts and bills receivable, \$462,967; property and plant, \$1,822,314; inventory of materials and products, \$144,425; insurance unexpired and taxes paid in advance, \$1290; total, \$2,926,724. Liabilities—Capital stock, \$2,413,000; accounts and bills payable, \$353,128; profit and loss account, \$160,596; total, \$2,926,724.

The American Car & Foundry Company reports its earnings as follows for the quarter ended February 28:

	1905.	1904.	Increase.
Net earnings.....	\$536,000	\$532,423	\$3,577
Dividend preferred stock... 525,000		525,000	.....
Balance.....	\$11,000	\$7,423	\$3,577
Dividend common stock.....		150,000	*150,000
Surplus.....	\$11,000	Def. \$142,577	\$153,577

* Decrease.

Dividends.—American Car & Foundry Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable May 1.

The last back dividends on the preferred stock of the International Power Company were paid off April 10, when the Board of Directors declared a semiannual dividend of \$3 per share, payable May 15. It is announced that hereafter the dividends will be declared on April 1 and October 1. The board also ordered canceled and retired \$75,000 of bonds out of the total issues of \$6,200,000.

The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1 per cent. on the preferred stock, payable April 20.

The Jones & Laughlin Steel Company has started up at its American Iron & Steel Works, Pittsburgh, a second Talbot open hearth furnace, which is running very successfully. The company now has two Talbot furnaces in operation, and is building two more, one of which will be ready for operation by May 1. It has recently installed additional soaking pit capacity, which it badly needed, and is now turning out from 2700 to 2800 gross tons of Bessemer and open hearth steel every 24 hours.

The Export & Domestic Can Company, a recently organized firm, has started working a large plant at 616 West Forty-third street, New York. The interests back of the new enterprise are also back of the Continental Can Company and the Automatic Vacuum Can Company. The incorporators are Fred. M. Assman, H. N. Norton and F. P. Assman. Fred. M. Assman is president; Mr. Norton, vice-president and treasurer, and Frank J. Currie, assistant treasurer and secretary. Although the company is not in the market for machinery at present it has ample space in its plant for enlarging its output and will in the future put in more machinery there. It will make a specialty of manufacturing cans to be packed for export.

The National Machine Tool Builders' Association.

(Continued from page 1242.)

WASHINGTON, D. C., April 12, 1905.—(By Telegraph.)—Tuesday evening was given up to a banquet which proved to be a very delightful affair. The speakers included Frederick I. Allen, Commissioner of Patents; C. H. Duell, former Commissioner of Patents and present Associate Justice of the Court of Appeals of the District of Columbia; Daniel Thew Wright, Associate Justice of the Supreme Court of the District of Columbia; W. J. Rich, Patent Examiner, and W. R. Wood of Cincinnati.

This morning's session opened with a discussion on the "Relative Cost of Power for Belt Driven and Motor Driven Machine Shops," which was introduced by an excellent address by G. H. Condict of the Electro Dynamic Company. Under the heading of "Patent Laws Particularly Applicable to Machine Tool Builders," an interesting talk was given the convention by W. R. Wood of Cincinnati. Mr. Wood mentioned the fact that the Patent Office was more and more appreciating the broad value of even minor changes in machine tool construction, which in these days of rapid development of the industry have really a considerable bearing upon the improvement of the art. Consequently, he said, the machine tool builders are enjoying especial liberality in the granting of patents.

The most interesting topic brought up for discussion at to-day's session concerned tariff revision. It was introduced by a paper compiled by Fred. A. Geier of Cincinnati, which was, in fact, the report of the committee appointed at the last convention to investigate this subject. Mr. Geier's paper was supplemented by an elaborate table showing the existing tariffs of all European countries.

It was decided to hold the next convention in New York City. While it is generally known that it will be held some time in December, the exact time will be set by the Executive Committee.

New York Pig Iron Warrant Market.

NEW YORK, April 12, 1905.

The demand for pig iron warrant certificates on the New York Produce Exchange was again rather light the past week. Sales were all for regular certificates and aggregated 1300 tons; April, 200 tons, \$16.50; May, 500 tons, \$16.50, and 100 tons, \$16.75; June, 500 tons, \$16.75. The following quotations were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash .....	.....	\$16.40	.....	.....
April	\$16.40	16.50	\$16.75	16.85
May	16.45	16.60	16.70	16.85
June	16.50	16.70	16.60	16.95
July	16.55	16.75	16.60	17.00
October .....	.....	.....	16.50	17.00
February .....	.....	.....	16.60	17.00

An Enormous Purchase of Coal.—There has been practically closed a transaction in the purchase of coal which is the largest in the history of the trade. The United States Steel Corporation has entered into a sliding scale contract, based on the wages scale, with the Pittsburgh Coal Company for what steam and gas coal will be required outside of the product of its mines for a period of 25 years. On the basis of the present requirements this amounts to about 4,000,000 tons, but the quantity, of course, will probably increase greatly during the life of the contract.

A marked increase in wages is reported in Japan since the beginning of the war, owing to the rising cost of living, which is now from 30 to 50 per cent. higher than a year ago.

The National Steel & Wire Company, Pittsburgh, Pa., has applied for a charter, with a capital of \$25,000. It proposes to build a plant at Hoboken, Allegheny County, Pa., to turn out fine wire products, making a specialty of wire for musical instruments.

Metal Market.

NEW YORK, April 12, 1905.

Pig Tin.—During the last week quotations in the local market were high, but there was little business at this level, showing that the trade here has little or no confidence in the London corner. The stock of metal here, together with the affloats, is large enough to cover the consumption for the next two months, and little Tin has been drawn from the warehouses owing to the high prices. The local prices for spot are 30.95c. to 31.25c.; April delivery, 30.75c. to 31.25c.; May, 30.25c. to 31c.; June, 29.75c. to 30.50c.; July, 29.50c. to 30.25c. To-day's quotations from London are £145 for spot and £136 5s. for futures, a difference of £8 15s., equal to a little over 2c. per lb., which reflects the lack of confidence in that market for the high prices of spot. The arrivals so far this month are 1865 tons, with 3252 tons afloat.

Copper.—The market continues very quiet, and prices are unchanged. Some of the larger producers report their books well filled with orders for the second quarter, and a number of large orders for delivery in the third quarter. The reports of strikes in the mining regions of Lake Superior among the Copper miners are regarded as of comparatively small importance, and while there is an uncertainty regarding the outcome, the larger producers are inclined to think the difficulties exaggerated. Closing quotations for to-day are: Lake, 15.25c. to 15.37½c.; Electrolytic, 15.12½c. to 15.25c.; Casting Copper, 14.87½c. to 15c. The London quotations are practically unchanged, spot being held at £67 7s. 6d., futures £67 15s., while Best Selected is higher at £72. The exports so far this month aggregate 9769 tons, of which about 4100 tons go to the Orient.

Pig Lead.—The market is firm at 4.50c. to 4.60c. The American Smelting & Refining Company's quotation for shipment Lead remains unchanged, being 4.50c. in 50-ton lots. The London market is again slightly higher, quotations being £12 16s. 3d. The St. Louis market remains unchanged at 4.47½c. to 4.50c.

Spelter.—The market continues dull and the demand is light. To-day's quotations on the New York Metal Exchange are 6c. asked for spot, and for May futures 5½c. asked. St. Louis quotes to-day 5.80c., and the London market has advanced slightly, to-day's quotations being £23 12s. 6d.

Antimony.—The market is slightly higher than our last quotations, Hallett's being quoted at 8¼c. to 8½c.; Cookson's at 8.50c. to 8.62½c., and other grades, 7.50c. to 8.12½c.

Quicksilver.—The market is practically unchanged, flasks of 75 lbs. being quoted at \$38. The London market is quoted at £7 12s. 6d.

Nickel.—The tone of the market is quiet. Prices are practically unchanged, large lots being quoted at 40c. to 45c., and smaller quantities at 50c. to 60c.

Tin Plate.—Prices remain firm. The American Sheet & Tin Plate Company continues to quote on a basis of \$3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or \$3.55, f.o.b. Pittsburgh. Plates are now held in Swansea at 11s. 9d.

We are indebted to L. Vogelstein, American representative of Aron Hirsch & Sohn, Halberstadt, Germany, for the following figures showing the German consumption of foreign Copper for the months of January and February, 1905, compared with the same period of time for 1904 and 1903:

	1905. Tons.	1904. Tons.	1903. Tons.
Imports	15,884	19,778	12,504
Exports	1,937	1,215	1,725
Consumption.....	13,947	18,563	10,779

Out of the above 13,099 tons were imported from the United States.

New York.

NEW YORK, April 12, 1905.

Pig Iron.—There has been a moderate amount of buying on the part of the foundry trade, but business is not brisk. In some instances furnaces which have just resumed operations make some concessions, but the majority of sellers are firm. Virginia furnaces have sold some moderate sized lots of Basic Pig both in this district and in New England. We continue to quote for Northern Iron, tidewater, \$18.25 to \$18.50 for No. 1 Foundry, \$17.50 to \$17.75 for No. 2 Foundry, \$17 to \$17.25 for No. 2 Plain and \$15.75 to \$16 for Gray Forge. Alabama and Tennessee Irons are quoted \$17.50 to \$17.75 for No. 1 Foundry and \$17.25 to \$17.50 for No. 2 Foundry.

Steel Rails.—Among the sales reported during the week is one lot of 13,000 tons for the St. Paul road. A South-western line is in the market for 25,000 tons, the Clover

Leaf for 10,000 tons, the Lackawanna for 15,000 tons and the Erie for 5000 tons.

Cast Iron Pipe.—The Eastern foundries are reported to be very full of work, especially on small sizes. The current demand is excellent and conditions continue to be most promising. It is expected that the high pressure service system for this city will soon be ready for bids, but the possibility exists that trouble may be encountered in finding a foundry in position to furnish the large quantity of Pipe this year which will be required for the contract. The market is very much stronger and Eastern foundries are now quoting carload lots at \$28 to \$28.50 per net ton for 6 to 8 inch at tidewater.

Finished Iron and Steel.—The American Bridge Company has secured the contract for furnishing the 10,000 tons of Steel which will be required for the new Altman Building in this city. This is the largest single contract placed last week in this locality. Quite a number of other building projects are rapidly coming into shape for contracting and it is likely that the present month may see considerably more tonnage placed. The American Bridge Company also entered last week quite a number of small contracts for bridge and structural work, amounting to about 15,000 tons. The highway bridge business is picking up, but competition for this class of work is very sharp. The Structural trade is now much better than at any time in the recent past, and it would appear that the spring business is now opening up in good shape. The Plate trade has been more active and a good number of contracts have been placed to cover requirements of buyers through the remainder of the year. No change in prices was made at the meeting of the Plate Association last week, but the Eastern mills are now so full of work that they are asking a premium of \$2 per ton on orders for very prompt delivery. The Bar trade has also shown quite an improvement and the mills are reported to be well provided with orders. Quotations, at tidewater, are as follows: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04½c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.74½c. to 1.84½c.; Soft Steel Bars, 1.64½c. to 1.74½c.

Old Material.—Large blocks of Steel Scrap have again been sold during the past week. The sales of this class of Material which have been made during the past 30 days have largely cleaned up such stocks. Nevertheless the leading consumers are now so well covered that scattering lots coming on the market do not bring quite as good prices as those at which recent contracts have been made. The opinion prevails, however, that Steel Scrap is more likely to go higher than lower during the spring months, owing to the enormous demand for Finished Steel. Among the sales of other Material reported during the week were 1000 tons of Heavy Cast Scrap, 500 tons of Stove Plate and 500 tons of Cast Iron Borings. A sale of 2000 tons of Yard Wrought is pending. While the demand for Cast Scrap continues excellent, the immediate outlook for business with the rolling mills is not so good. Many of these mills are now out of the market, having provided themselves with large stocks. It is therefore possible that those who have rolling mill Scrap which must be moved may not be able to get within 50c. of recent prices. Others in position to hold are confident that in the near future they will be able to get more money. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails.....	\$22.00 to \$22.50
Old Steel Rails, rerolling lengths.....	16.50 to 17.50
Old Steel Rails, short pieces.....	16.00 to 17.00
Relaying Rails.....	20.00 to 21.00
Old Car Wheels.....	17.50 to 18.50
Old Iron Car Axles.....	22.00 to 23.00
Old Steel Car Axles.....	19.50 to 20.50
Heavy Melting Steel Scrap.....	16.00 to 17.00
No. 1 Railroad Wrought Scrap.....	20.00 to 20.50
No. 1 Yard Wrought Scrap.....	18.50 to 19.00
Iron Track Scrap.....	18.00 to 18.50
Wrought Pipe.....	14.50 to 15.50
Ordinary Light Iron.....	11.00 to 12.00
Cast Borings.....	9.00 to 10.00
Wrought Turnings.....	12.50 to 13.50
No. 1 Machinery Cast.....	16.00 to 16.50
Stove Plate.....	13.50 to 14.50

The Standard Stamping Company announces the removal of its works from Buffalo to Albion, N. Y., where it has installed a modern plant with upward of 50,000 square feet of floor space equipped with electric power and every facility for the economical production of metal stampings of every description. The company has purchased the plant of the Buckland Fire Extinguisher Company, and to its large line has been added the manufacture of chemical fire extinguishers.

The first-class battle ship Minnesota was successfully launched at the plant of the Newport News Shipbuilding & Dry Dock Company, Newport News, Va., April 8.

HARDWARE.

THE Post Office Department has made an important ruling adverse to the interests of certain catalogue houses that have recently endeavored to utilize the facilities of the rural free delivery service without rendering any return therefor in the shape of postage. All retail Hardware merchants who have had occasion to feel in any degree the competition of mail order houses are doubtless familiar in a general way with the devices that have been resorted to from time to time by these large concerns in their efforts to divert the rural service to private ends, and especially to use it for the purpose of circulating their catalogues. The rural carriers have been bribed, lists of addresses have been purchased from carriers and postmasters and endeavors made in various ways to evade the payment of full postage, which on one of the large catalogues of the principal mail order houses is from 25 to 30 cents. One of the latest schemes for distributing these catalogues consisted in arranging with some person residing on each rural route to receive by freight a consignment of catalogues large enough to supply each patron of the route and to distribute them by placing them in the rural free delivery boxes. This procedure has just been declared illegal by the Post Office Department, and the mail order houses will consequently be forced to abandon it. This action is important, not only because of its direct effect, but also because it indicates the attitude of the Department and the willingness of the officials to go to the full extent of the law in the effort to prevent abuses of this character in connection with the rural free delivery service.

The Chamber of Commerce of Hamburg, Germany, makes an interesting argument for international postage stamps in its annual report, asking the German Government to assist in bringing about this form of universal postage. The reason given is that many letters of inquiry from foreign countries remain unanswered because they lack franking stamps for the return letters. It is inconvenient for an American, for example, to secure a German postage stamp to inclose for the answer to an inquiry made of a German merchant or manufacturer. Return postage is common courtesy in such a letter, and an international postage stamp would solve the difficulty. It is, of course, to be presumed that when a letter of inquiry means possible business for the person or house addressed it will receive an answer, postage or no postage inclosed. The same rule of courtesy that demands that return postage in this country should accompany an inquiry which is out of the line of the regular business of the party addressed and for the benefit of the inquirer holds also in foreign inquiries where it is difficult, if not impossible, for the writer to obtain in regular course the necessary stamps to prepay return postage. In such correspondence the matter of postage is indeed usually a much graver one than with merchants in this country, as foreigners are frequently peculiarly sensitive in regard to any postal expense to which they may be put by their correspondents. There are certainly many considerations which indicate that it would be wise for the International Postal Union to take up the matter for the common good of those engaged in international commerce.

Condition of Trade.

A most substantial basis is furnished for the hopeful anticipations which prevail by the generally prosperous conditions which exist throughout the country. It is noticeable that reports from many sections refer to the well being which is enjoyed with activity in trade, general employment of labor and the existence of a spirit of enterprise which promises to result in projects which will keep capital moving. The state of the Iron market, with its extraordinary production and consumption, contributes directly to the strengthening of the general tone of prices, besides being another evidence of the activity in various departments of the commercial field. Other indications to the same effect are the great volume of clearing house exchanges in the various financial centers. As if to confirm the existing expectations of continued well being throughout the country, there now comes from the Department of Agriculture the most encouraging estimates of the next wheat crop, indicating at this early date a yield of extraordinary dimensions. The signs thus point with practical unanimity to a year of exceptionally large and prosperous business, in which of course the Hardware trade will have its proper share. In view of these conditions manufacturers are generally producing goods with full confidence that they will be readily absorbed. Some of them are indeed finding the demand already such as to tax their producing facilities. As a rule, however, the supply is sufficient thus far, but with indications that in a good many lines a shortage before the season progresses very far is not unlikely. There is on the part of manufacturers a good deal doing in the way of business enterprises—improvements in plants, the bettering of factory administration, additions to variety of goods produced, and more progressive efforts for the marketing of goods at home, and especially abroad. All this is a recognition not only of a desire to avail themselves of the present favorable conditions but also of the necessity for keeping everything connected with business in the best shape so that competition, now keen and likely sooner or later to be still more keen, may be successfully met. A similar principle is operative with the distributors of Hardware. Merchants, whether wholesale or retail, are giving more attention than ever before to the improvement of their methods, careful buying, and in general to an energetic and enterprising conduct of their establishments. All this is obviously wise, as in this way individual merchants realize their share of the prosperity which is meted out to each in proportion to his efforts and deserts.

Chicago.

Conditions are not materially changed since the review published in last week's issue, except in the matter of both Wire and Cut Nails, which show temporary evidence of weakness in jobbing circles, due to the unusual liberality exercised by mills in making contracts before the last advance in price. Jobbers and other holders of contracts with Nail mills for both Iron and Steel Cut Nails are disposed to make concessions to the retail trade in order to force immediate buying. Strangely enough, this temporary weakness comes at a time when the consuming demand is the greatest. Steel Cut Nails are offered by some manufacturers as low as \$1.85, Chicago, in carload lots to jobbers, and \$1.90 in carload lots to retailers, with about 10 cents advance for Iron Cut Nails, making Iron range from \$1.95 to \$2. At the same time there are manufacturers of pure Iron Nails whose reputation is established for actually furnishing puddled iron goods who are able to command a price as high as \$2.06, base, Chicago, in car lots. Whatever price cutting on Wire Nails there is comes from overloaded jobbers rather than

from the mills. March building permits granted by the city of Chicago aggregated more than \$6,000,000, or about three times as much as the March previous and about \$1,000,000 more than the first three months of 1904. A building boom is on and Builders' Hardware is correspondingly active. Jobbers and retailers alike are pushed to their utmost to fill orders for Builders' Hardware, the greatest demand coming from the builders of flats and residences in the city and suburbs, with a few large downtown operations thrown in to swell the general average. The trade seems to be reconciled to the advance on Tacks because it has been very generally recognized that Tacks were selling below actual cost price, and the advance in the list noted last week has some promise of being permanent, notwithstanding the fact that all previous attempts on the part of Tack makers to establish a price that showed a profit have failed. There is little quarrel, similarly, with the advances on Eaves Trough and Conductor Pipe. In the Builders' Hardware line the month of March has broken records with a number of large producers and jobbers, and the business thus far done in April promises to make still further records in this market. In general, March has proved to be an excellent month in Hardware lines, one large jobber stating that it barely missed doubling the March of last year, and others stating that it exceeded last March, notwithstanding the fact that for them March of 1904 held the record up to that time of any month of any year. One encouraging feature of the situation seems to be that there is less quarrel with the matter of prices than has been in evidence in two years, and the time of delivery is the paramount consideration in closing any purchase deal. Wire Cloth and Poultry Netting are extremely active and Woven Fencing scarcely less so. Lawn Mowers are finding active sale, and Garden Hose and Fixtures are expected to follow suit shortly.

NOTES ON PRICES.

Wire Nails.—The mills have been anticipating a revival of new business, owing to the free distribution from jobbers' and retailers' stocks. This has been realized in a measure, but a larger demand is looked for in the near future. Prices of raw material justify higher prices, but as yet no advance in prices has been announced. The market is firm in tone at the following prices, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....\$1.80
Carloads to retailers..... 1.85

New York.—Local demand is increasing and becoming more regular, not being affected as heretofore by sudden changes of weather. Out of town customers are finding their stocks depleted in assortment and are ordering more Nails. The market is firm and New York quotations are as follows: Single carloads, \$1.99; small lots from store, \$2.05.

Chicago, by Telegraph.—Specifications on contracts are fair to good, and a very general building boom throughout the West is leading to a depletion of jobbers' and retailers' stocks. Prices are unchanged, at \$1.95, base, in car lots to jobbers; \$2 in car lots to retailers, with 5 cents advance for less than car lots from mill.

Pittsburgh.—Large jobbers report that stocks of Wire Nails in their warehouses are moving out more freely than for some time, and for this reason the mills expect an early improvement in demand. From some parts of the country a better business in Wire Nails is being placed, and the mills expect general all round improvement within a short time. Prices are firm, but unchanged, and we quote: Wire Nails in carloads to jobbers, \$1.80; carload lots to retailers, \$1.85, and in less than carload lots at \$1.90, f.o.b. Pittsburg, terms 60 days, or 2 per cent. off for cash in 10 days.

Cut Nails.—Owing to light demand, the market has a decided tendency toward weakness. This it is understood is not confined entirely to mills outside the Association. Within the past week an improvement in orders has been perceived, and it is hoped by those directly interested

in this branch of the business that larger requirements may restore prices to official quotations. The following official quotations are now shaded from 5 to 10 cents per keg, according to location of mills. Carload lots, \$1.80; less than carload lots to jobbers, \$1.85, and to retailers, \$1.95, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

New York.—The demand is not large, but steady, although it has not increased in the same proportion as for Wire Nails. Prices are unchanged and New York quotations are as follows: Carloads on dock, \$1.94; less than carloads on dock, \$1.99; small lots from store, \$2 to \$2.05.

Chicago, by Telegraph.—Steel Cut Nails are sold in car lots to retailers or consumers at \$1.90, base, and to jobbers at \$1.85, both prices being 10 cents below the official Wire Nail schedule. Iron Cut Nails made from muck bar iron are ordinarily quoted at from \$1.95 to \$2, with some makers able to secure even higher prices because of a reputation for quality.

Pittsburgh.—Owing to dull demand and the anxiety of the mills for business prices of Cut Nails are being shaded from 5 to 10 cents a keg on fair sized lots. A better demand for Cut Nails is looked for with the opening up of spring trade and the return of good weather, which will allow active building operations. While we maintain former quotations, these do not represent bottom of the market, concessions being freely made, as noted above. We quote: Carload lots, \$1.75 to \$1.80; less than carload lots to jobbers, \$1.85, and to retailers, \$1.95, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents per keg advance over Steel Cut Nails. The above price of \$1.75 on Steel Cut Nails is the minimum of the market and is obtainable only by the large trade and for desirable orders.

Barb Wire.—Throughout the West generally demand continues, while from other sections of the country the mills report only a slight improvement in the requirements of the jobbing trade. The market is firm in tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Chicago, by Telegraph.—There is no decrease in the active demand for Barb Wire from the agricultural West. Prices are unchanged, as follows: Car lots to jobbers, Painted Wire, \$2.10; Galvanized, \$2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, \$2.25; Galvanized, \$2.55; Staples, Bright, \$2.05; Galvanized, \$2.35.

Pittsburgh.—The mills report a slight improvement in demand, but the amount of new tonnage being actually placed is relatively small. Stocks in the hands of jobbers are large, and these will have to be materially reduced before the mills can expect very much improvement in demand. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Smooth Fence Wire.—New business continues to be placed with the mills, and this is particularly large for some gauges of Galvanized Wire. The market continues firm without change in prices. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.65
Retailers, carloads.....	1.70

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized...\$0.30	.35	.40	.45	.55	.65	.75	1.05	1.15	

Chicago, by Telegraph.—Demand is in some gauges, particularly of Galvanized Wire, far in excess of the

ability of mills to supply. Prices are firm and unchanged, as follows: \$1.80, base, for Annealed Wire, in car lots to jobbers; \$1.85 in car lots to retailers, with 5 cents advance for less than car lots, and 30 cents premium over Annealed for Galvanized.

Pittsburgh.—Demand for Smooth Fence Wire is fairly active, makers of Woven Wire Fencing being quite busy, and are accordingly placing fair sized orders for Smooth Wire. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65
Retailers, carloads..... 1.70

Binder Twine.—The present indications of crop conditions are favorable for a large distribution of Twine, and first orders will probably need supplementing if the outlook continues propitious. This situation is calculated to impart to the market increased activity, something which it has lacked for some time. The market is fairly represented by quotations $\frac{1}{4}$ cent in advance of those announced at the beginning of the season, as follows:

	Per lb.
Sisal	9 $\frac{3}{4}$ c.
Standard	9 $\frac{3}{4}$ c.
Standard Manila (550 feet).....	10 $\frac{3}{4}$ c.
Manila (600 feet).....	12 c.
Pure Manila (650 feet).....	13 $\frac{1}{4}$ c.

Five-ton lots, $\frac{1}{8}$ cent less; carload lots, $\frac{1}{4}$ cent less, Chicago delivery, usual terms of payment. Kansas City, Omaha, Council Bluffs and Minneapolis, $\frac{1}{4}$ cent. added. Prices not guaranteed. Allowing for freight, New York prices would be $\frac{1}{4}$ cent lower than the above.

Rope.—There is a fairly active demand which promises to become larger as the season progresses. The demand for Mixed Manila Rope appears to be on the increase, and manufacturers are more nearly duplicating in appearance the genuine article. There is a wide range of prices for the mixed article, varying with the amount of adulteration. Quotations are as follows: Pure Manila, 11 $\frac{1}{4}$ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 to 8 $\frac{1}{2}$ cents per pound.

Window Glass.—Demand for glazing purposes has been increased by the more settled weather conditions, accompanied by warmer days. The carload trade from factory is reported as continuing somewhat light. The fact that the Manufacturers' and Jobbers' Window Glass Association Executive Committee reaffirmed prices the last of March, that labor troubles may be anticipated among Glass workers, and the high price of foreign Glass lead some to believe that no lower Glass prices will rule this fall. Local quotations are as follows: First two brackets, single, 90 to 90 and 15 per cent. discount; larger sizes, both single and double strength, 90 to 90 and 10 per cent. discount from jobbers' list.

Oils.—*Linseed Oil.*—Large consumers are sending in specifications on contract orders as necessity requires, but new business in a large way is small. There is a steady but somewhat limited demand for small lots in the local market. Crushers are offering no inducements in the way of concessions in prices to stimulate business. The market is firm at former prices. New York quotations are as follows: City Raw, 47 to 48 cents per gallon, according to quantity; State and Western Raw, 45 cents, in any quantity.

Spirits Turpentine.—For several weeks the price of Turpentine has been advancing, and during that time has reached within 2 cents of the highest price of 1904, which was 68 cents, the highest price during the month of January. Manipulation of Southern markets, together with a heavy demand and delayed movement of the new crop, has contributed to the strong position of the market. Spirits carried over into the new season are said to show a decrease of about 1000 barrels as compared with the number carried over into the new season in 1904. Local demand is of a hand to mouth character as a result of high prices and the nearness of the new crop. New York quotations, according to quantity, are as follows: Oil barrels, 64 $\frac{1}{2}$ to 65 cents; machine made barrels, 65 to 65 $\frac{1}{2}$ cents per gallon.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

EAGLE LOCK COMPANY, Terryville, Conn.: Extra pages for insertion in its catalogue, illustrating and describing Jewel Case, Chest, Drawer and Pad Locks, Key Blanks, &c.

THE CHAMPION SAFETY LOCK COMPANY, Geneva, Ohio: Illustrated descriptive catalogue devoted to Sash Locks and Lifts, Cupboard Catches and Turns, Drawer Pulls, Push and Kick Plates, Base Knobs, Door Stops, Door Bolts, &c.

THE RICHARDS MFG. COMPANY, Aurora, Ill.: Illustrated price-list relating to House and Barn Door Hangers, Trolley Overhead Carriers and Track, Door Rail, Stay Rollers, Fire Door and Shutter Fixtures, Foot Scrapers, Expansion Bolts, Rolling Store Ladders, Double Acting Floor Spring Hinges, Door Holders, Door Latches, Wrench Pipe Jaws, Wagon Jacks, Folding Buggy Seats, Post Hole Augurs, Scaffold Supports, Mounted Grindstones, &c.

THE AVERY-CALDWELL MFG. COMPANY, Bellaire, Ohio: Catalogue illustrating Metal Ceilings, Wall Finishes, Wainscoting, Metal Roofing and Siding, Enameled Sheet Iron Fire Fenders, Roll Roofing, Roof Trimmings, Conductor Pipe, Eave Trough, Metal Shingles, Elevator Buckets, Steel Shelving, Filing Cabinets, Shop Boxes, Steel Barrels and Kegs, Waste Boxes, Steel Brick and Mortar Hods, &c.

THE BENBOW-BRAMMER MFG. COMPANY, St. Louis, Mo.: Folder describing its "Trio of Trade Winners," the B. B., the Brammer and the Schroeder Rotary Washing Machines, the special features of which are mentioned.

THE DE LAVAL SEPARATOR COMPANY, 74 Cortlandt street, New York: Illustrated pamphlet devoted to De Laval Cream Separators, accompanied by a treatise on "The Source of Good Butter."

WM. COUPE & Co., South Attleboro, Mass.: Printed matter relating to Excelsior Raw Hide Belting, Lace Leather, Lace and Picker Leather.

THE WARNER FENCE COMPANY, Ottawa, Kan.: Illustrated catalogue relating to Farm, Poultry, Stock and Ornamental Fencing, Gates, Hitching Posts, Barb Wire, &c.

LORING COES' NINETY-THIRD BIRTHDAY.

ON the 22d of this month Loring Coes, president and treasurer of the Coes Wrench Company, Worcester, Mass., will celebrate his ninety-third birthday. Mr. Coes is an extraordinary example of longevity combined with vigor and industry. He is still doing business as actively as ever, being at the office every morning at 8 o'clock and apparently in rugged health. He is now preparing for his annual fishing trip to the Rangeley Lakes, his forty-seventh consecutive visit. Despite Dr. Osler's much quoted opinion that the most useful part of a man's life has been passed at the age of 40, the inventions of Mr. Coes which have proved especially meritorious have been placed on the market since his seventieth year. The original Knife Handle Wrench was patented in 1885, at which time Mr. Coes was 73 years of age. Since that period he has taken out some 15 patents on Wrenches, and in the last four years has invented and put on the market two new styles of Wrenches, a third being nearly ready for the trade. Mr. Coes at the present time is superintending the erection of a new engine in the company's Knife department which will practically double the capacity of the plant, this being the third time the output of this department has been doubled in six years.

TRADE ITEMS.

P. A. MYERS of F. E. Myers & Bro., Ashland, Ohio, Pump and Hay Tool manufacturers, has just obtained two important patents relating to improvements in Sling Hay Carriers. The Carrier manufactured under these patents will be known as the Myers Sure Grip Sling Un-loader.

THE STANDARD HARROW COMPANY of Utica, N. Y., has purchased the manufacturing business of J. R. Shangle at Hightstown, N. Y., including Power Sprayers, Potato Harvesters, &c., and has taken immediate possession of the business. Mr. Shangle will be retained in charge of the Hightstown factory through the spring season. At the close of the season the business will be removed to Utica. It is the intention of the company to make a strong effort for business on Sprayers in connection with the large trade they have already established on Potato Harvesters and kindred tools.

THE G. W. COLE COMPANY, 141-145 Broadway, New York, manufacturer of 3 in 1 oil, has issued a 28-page booklet of information as to the multifarious uses to which the preparation can be advantageously and profitably put, many of which would not otherwise occur to the average individual. There are 128 indexed paragraphs giving specific instructions for intelligent use in connection with metal, wood and leather surfaces, including Cutlery, Firearms, Bicycles, Typewriters, Sewing Machines, Clocks, Cash Registers, Mowers, furniture, &c. The company is also distributing in circular form "a Razor saver for every shaver," which refers particularly to the use of the oil on Razor Strops. This company also manufactures R. R. R. (really removes rust) and Pace Maker Lubricant.

C. F. BENNETT, secretary and director and one of the founders of the Hockaday Hardware Company, Wichita, Kan., has disposed of his holdings in the company to Ed. Hockaday, president; E. T. Battin, vice-president, and I. N. Hockaday, treasurer and manager. Mr. Bennett will continue his residence in Wichita, making his headquarters with the Hockaday Company.

THE ALUMINUM & WHITE METAL MFG. COMPANY, 336 Broadway, New York, announces that after years of experimentation it has succeeded in plating with gold and silver on aluminum metal. This invention the company is confident will greatly enlarge the usefulness of aluminum in the manufacture of artistic novelties, thus making possible articles light, noncorrosive and handsome in appearance. The company also does plating on any metal in gold and silver, and makes a specialty of plating in gold, silver and gun metal for jewelers. An extensive line of goods finished in gun metal, in addition to regular lines of aluminum and white metal articles, are also manufactured.

THE firm of W. H. & G. W. Allen, Hardware merchants, 113 and 115 Market street, Philadelphia, Pa., composed of H. T. Chorley, Jno. D. Barr, W. Allen Barr and Joseph Corn, has, owing to the death of J. D. Barr, been dissolved. The surviving partners will continue the business under the same name and at the former location.

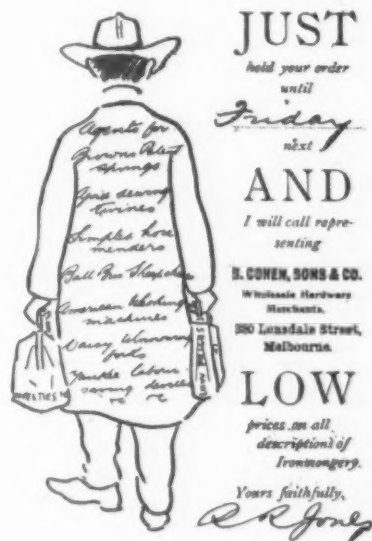
THE WIMBERLY & THOMAS HARDWARE COMPANY, Birmingham, Ala., has just finished putting in a new plate glass front with large prismatic transom lights, furnishing ample light for its store, which is 182½ feet deep, running through from First to Morris avenues. It has also installed glass showcase counters in place of wooden counters with showcases on top, as previously.

JAMES FAIRWEATHER AND H. R. W. RAHN of Philadelphia, Pa., have formed a copartnership under the name of Fairweather & Rahn and will conduct a General Hardware business at 1809 Market street, in that city. They will make a specialty of Builders' Hardware, Tools and Contractors' Supplies.

Lytton & Andrew, Ripley, O. T., have lately disposed of their Hardware and Implement business to Plog & Kinchelve.

TRAVELER'S ADVICE CARD.

A MERICAN Hardware salesmen may think that unique ideas related to selling goods are peculiarly American, but the reproduction herewith of a traveler's advice card received from a valued correspondent in



Traveling Salesman's Advice Card.

the antipodes indicates that the Australian is not the "Man Behind." The illustration reproduced herewith is printed on the reverse side of a post card, and used by the salesmen of S. Cohen, Sons & Co., 380 Lonsdale street, Melbourne, who are wholesale ironmongers. The design originated with a member of the firm.

AMONG THE HARDWARE TRADE.

The Miles & Ulmer Company, Miles City, Mont., has filed articles of incorporation for the purpose of conducting a general business in Hardware, Tinware, Plumbing, Vehicles, Implements and Mining Supplies. The company is capitalized at \$30,000, all of which has been subscribed. The directors are G. M. Miles, J. D. Miles, George Ulmer and F. W. Moisey, all of Miles City.

S. M. Gilbert, for some years engaged in the Hardware business at Salem, S. D., has sold out to Tyler & Hallas and F. R. Strain, who conduct rival Hardware stores and who have divided the Gilbert stock equally between them.

J. F. Wozab has succeeded **Wozab & Ford** in the Hardware and furniture business in Humboldt, Neb.

J. H. Klutts has disposed of his Hardware, Stove and Implement stock at Terrell, Tex., to S. C. Clyette and Henry Anderson, who will continue under the style of Clyette & Anderson.

N. M. Hansen has succeeded Rogers & Co., Hardware, Stove and Paint merchants, Fremont, Neb.

Mendell Hardware Company has acquired the Hardware, Stove and Paint business formerly conducted by Whiteside & Fairfield in Bartlesville, I. T.

Conway Hardware Company, Conway, S. C., has recently begun the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Implements, Paints, Sporting Goods, Coffins and Caskets, &c.

Murphy & Kavanagh have bought the Hardware, Stove, Sporting Goods and furniture business formerly conducted by Frank Sharrett at Crab Orchard, Neb.

S. P. Larsh has succeeded Nichols & Larsh in the wholesale and retail Hardware, Stove, Implement, Paint and Sporting Goods business at Tecumseh, O. T.

Important Postal Decision Affecting Catalogue Houses.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., April 11, 1905.

A RECENT decision by the Post Office Department affects directly the circulation of catalogues of the mail order houses through the rural delivery service. These houses had adopted the plan of making a freight shipment of catalogues to some one on the free delivery route, who was to distribute them through the rural mail boxes. This utilization of the boxes was a most important feature of the scheme. To personally deliver each catalogue to a farmhouse in most cases would involve several times as much travel as to distribute them through the rural boxes, which are usually on the highways at a distance from the house, and the fact that the books did not come by mail would be disclosed to the addressees.

This method of delivering catalogues was adopted by one large Chicago house not long ago, and the facts were promptly reported to the Department by rural carriers, who found the catalogues in the boxes on their rounds and noted that, while wrapped and addressed, they bore no postage stamps. The Department at once took the matter up for investigation and learned that the practice had been resorted to in various parts of the country. The postal laws and regulations were consulted and it was decided that the utilization of rural boxes for such unofficial transactions was contrary to the letter and spirit of the statutes, whereupon the Department issued the following instructions to all postmasters in rural free delivery regions:

Sir: Owing to the numerous complaints which are being made to the Department that advertising circulars and other mailable matter, postage on which has not been prepaid, are being placed in rural letter boxes intended for persons who receive mail through such boxes, and in order that there may be no misunderstanding regarding the proper disposition of such matter, you are hereby advised that patrons' boxes erected on rural routes are intended exclusively for the reception of matter regularly in the mails, for delivery or dispatch through the mails, and 'mailable' articles which carriers find deposited in such mail boxes on their routes are properly 'in the mails,' and subject to all the rules regulating mail matter, including the payment of postage thereon.

You will promptly and fully instruct the rural carriers attached to your office that all mailable matter found in rural letter boxes without the proper postage affixed or money provided sufficient to purchase same should be taken to the initial post office to be held for postage.

Soon after these instructions were issued the question was raised as to the specific authority of the Fourth Assistant Postmaster-General to treat rural free delivery boxes as designed only for official purposes in view of the fact that each patron of the route furnishes his own box. The mail order houses would have been greatly pleased if they could have upset this ruling, but the matter having been brought officially to the attention of the Assistant Attorney-General for the Post Office Department, an opinion has been rendered supporting the Department's action at every point. The Assistant Attorney-General cites the law authorizing the Department to protect rural free delivery boxes, and adds:

By this act the authority and protection of the United States are thrown around rural letter boxes, and they thereby become, so long as they are used for the deposit and delivery of mail matter, wholly within its control. When a rural letter box is erected there is an implied agreement between the person erecting it and the Postmaster-General that it shall be used exclusively for the purpose of transmitting and receiving mail matter. Neither the patron by whom the box is erected nor any other person is entitled to deposit therein articles or matter of any kind except such as is intended to be dispatched or delivered by mail. In the very nature of things there can be no divided control or authority over the box such as would authorize its use for purposes other than those of the mails. Congress has no power to provide for the protection of articles or matter which are outside the mails, and the statute quoted undertakes

only to protect the box and the mail matter which it contains. No private individual, company or association has authority to place advertising circulars, merchandise or other articles of any kind within rural letter boxes except for the purpose of dispatch of mail, and when so deposited the matter must be properly prepaid by stamps affixed.

This decision effectually disposes of all the contentions of those who have criticised the Department's action. Naturally the catalogue houses are greatly disappointed at the outcome, but the rural retail merchant will be rejoiced to learn that the Department's powerful influence is being used to prevent, so far as possible, the abuses that have rendered the rural free delivery service so injurious to local trade.

W. L. C.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, and are referred to the manufacturers:

FROM ARTHUR R. CHAREST, Moorhead, Minn., who will open up as a retailer of Shelf and Heavy Hardware, Stoves and Paints about April 15 in a new store which has been attractively fitted up.

FROM BEWLEY HARDWARE COMPANY, Sumter, S. C., which has just commenced business, handling a line embracing Heavy and Shelf Hardware, Stoves, Sporting Goods, &c.

FROM O. L. MILLER, Ravenna, Neb., who has bought out the Hardware, Stove and Sporting Goods business formerly conducted by Albert Wilke.

FROM NORTHERN HARDWARE COMPANY, Great Falls, Mont., which has been incorporated, with a capital stock of \$50,000, to carry on the wholesale and retail business in Shelf and Heavy Hardware, Stoves, Implements, Sporting Goods, &c.

FROM HUTCHINS & CORNWELL, Defiance, Ohio, who have commenced the general Hardware business.

FROM RUTLEDGE & SCHULTE, Belgrade, Mont., who have just opened up in business as merchants in Shelf and Heavy Hardware, Stoves, Paints, Sporting Goods, &c.

FROM HEITZMAN & MARY, Riverside, Iowa, who are successors to Heitzman & Critz in the Hardware, Stove, Implement and Sporting Goods business.

FROM M. E. YOUNG, Plymouth, Ill., whose collection of catalogues, price-lists, &c., was destroyed in a recent fire. Mr. Young would be pleased to receive printed matter relating to Hardware, Stoves, Farm Machinery and Implements, Plumbing, &c.

FROM H. L. ATHERTON, Hudson, Mich., who has moved into new quarters, where he is making an attractive display of Hardware, Stoves, Implements, Paints, Sporting Goods, Harness, Wagons and Carriages, &c.

FROM LAWSON & PETERSON, Rockford, Ill., who have lately opened up as general Hardware merchants.

FROM FRANK FORSYTH, Holcomb, N. Y., who has succeeded Charles Donahue in the Hardware business.

FROM C. L. RADLEY, Ayr, Neb., who has purchased the Hardware and Saddlery business of T. J. Edgington and will take possession May 1.

FROM ARTHUR B. REED, North Abington, Mass., who has opened up in the wholesale and retail business in general Hardware.

FROM C. G. EMPFIELD, Broken Bow, Neb., who succeeded Walter J. Woods in the Hardware, Stove and furniture business.

FROM HILL & SONS, Sylvan Grove, Kan., who are successors to C. R. Latta in Hardware, Stoves, Implements, Paints, Sporting Goods, &c.

FROM NASBY & HAUGE, Bode, Iowa, who have succeeded G. A. Nasby and will continue the sale of Heavy and Shelf Hardware, Stoves, Paints and Sporting Goods.

THE OLD AND THE NEW IN BUSINESS METHODS.

THE CARD INDEX RECORD.

THE liability of the average merchant to plod along in old time ruts, even in this new time day of enterprise and hustle, is proverbial. No doubt exists in the mind of any man that we should do everything toward shortening our hours of labor, systematizing our methods of business, simplifying the daily routine of matter laid before us; and yet, constant readers that we all are of the clever ads. in our magazines, trade journals, &c., the thousand and one soliciting circulars sent out by houses devoting their entire time along this line, we read and study and promise ourselves to take up one or the other at the first opportune moment—and most of us do not.

Perhaps no one thing has been brought to the desk of the merchant in many years offering such possibilities as does the card index system for the Hardware merchant or the busy man in any walk of life—for the Hardware merchant in particular, because his daily life is made up of one constant grind of small things, and large, too, remember. Discounts never ending and ever changing are his; quotations galore are offered, and with many are not a matter of record; contracts, stock keeping, estimates, appointments, collections, engagements, &c., all enter into the great mass of those things we are constantly forgetting and could simplify, condense and bring to a certainty if we only would.

The Iron Age Hardware Merchant's Card Index Record,*

of which your issue of March 16 gave a very attractive, and complete description, I take it covers all the ground usually gone over by the Hardware merchant. It would seem that a very thorough reading of this article would convince any Hardwareman that he had the means at hand to reduce his head work and worry at least one-half through the use of this system. The day of system is at hand, and when one can bring before him in condensed form those things heretofore scattered in all sorts of out of the way places, and reduce to a minimum the taxing of a memory usually very unreliable, it is time to look for such help and be at the front.

The Varied Uses

of this Card Index Record are so many that, when fully considered, a card index becomes almost invaluable, and this particular one, as shown, covers nearly every want of the Hardware business. It takes the place of price book and of quotation book. It can be used as a complete catalogue index by substituting plain cards or sheets alphabetically arranged. It is the best general reminder I know of and the easiest to lay hands on. It makes a short order book by always having at hand a memoranda of quick wants when dictating or writing. The hundred and one memorandums that are generally lost or astray when wanted are covered in this—such as dates and subjects for advertising, days for special window displays, appointments with customers or sellers of goods, various changes in the store and when to be made, collections and special days set for same, contract goods and days on which they are wanted or promised—in fact, nearly everything of vital interest to the store can be transferred to the Card Index Record and be found immediately.

Things Forgotten

are the bane of the man in any business. The collector goes out with his statements and instructions that from those who do not pay he is to get a date for coming again. These dates are noted on the back of the statement or an envelope; perhaps are found again, perhaps not. Many a good customer is lost through forgetting an appointment or the sending of goods on a certain date. Drafts are not sent as advised. Bills are not paid when promised. Prospective business is not looked after as intended. The special sale day slips by and the goods bought for the occasion are still in the drawers. Season

* The Hardware Merchant's Card Index Record, with 1500 assorted blank slips, 3 x 5 inches in size, price \$6, express charges prepaid. Address *The Iron Age*, 232-238 William street, New York.

goods are not brought out when meant to be. And so it is and has been with us all, and it is these things a card index system is meant to cure, and will cure, if fair interest and attention are given; and it takes but little of one's time to keep it up, for the reason it is always at your hand, and it brings everything else wanting attention there.

As a Record of Prices

it becomes almost invaluable and should pay for itself many times over. But few of us can carry in our memory accurate costs on even general lines of Hardware, and the constant hunt for catalogue and price-list is a large waste of time, and frequently when found the cost is not up to date. This is a day of many changes, and the merchant who would be successful must be able to answer almost instantly an inquiry as to cost to the buyer of anything in his line.

The use of the Card Index Record for this purpose will also put the employee in position to serve a customer much more readily than otherwise, for the reason that if used at all it must be up to date, and this the clerk is assured of even in the absence of the proprietor.

Brain Work and Brain Worry

are reduced to a minimum and transferred to this most ingenious device, and anything that will contribute toward the lessening of the never ending cares of the Hardware merchant becomes a boon indeed.

Among all the questions submitted and answered through the question box of the various State associations in session through the months of February and March the writer does not recall a reply as to how to systematize one's business along the lines of a card index record, showing how little has been apparently known of it, and, still more, the need of it, for no question is asked oftener. I predict that another year will find many of us familiar users of it and of other labor saving and brain preserving devices that lead up from its use.

The Iron Age should be congratulated on its very elaborate and very beautiful exposition of the arrangement and usage of a system that is destined in time to be on every business man's desk. H. C. WISEMAN.

TEXAS HARDWARE JOBBERS' ASSOCIATION.

THE tenth annual convention of the Texas Hardware Jobbers' Association will be held in Sherman, Texas, on April 20, 21 and 22. J. C. Bering of the Bering-Cortes Hardware Company, Houston, is president of this association, and R. F. Bell of the Wm. Henry & R. E. Bell Hardware Company, Forth Worth, is secretary.

SILVER & CO.'S NEW CATALOGUES.

SILVER & CO., 304 to 314 Hewes street, Brooklyn, N. Y., have just issued catalogue No. 11, devoted to Coffee and Tea Pots, Roasting and Bread Pans, Cake and Bread Molds, Poachers, Potato Mashers, Egg Beaters, Steam Cookers, Bread Cabinets, Toasters, &c. Also catalogue No. 12, relating to artistic Bath Fittings and specialties for bathrooms. A smaller catalogue relates to Oil and Gas Heaters and Gas Radiators, while No. 14 is devoted to Blue Flame Oil Cook Stoves and goods of accessory character.

THE sixth annual banquet of the Grand Rapids (Mich.) Retail Hardware Dealers' Association was held in that city on the 4th inst. It was an occasion of much enjoyment and instruction. A feature of the banquet was the reading of several papers by the members on topics of practical interest and importance.

THE DUNCAN & GOODELL COMPANY, Hardware merchants, Worcester, Mass., has made a change in officers, which was rendered necessary by the death of President Harlan P. Duncan. Brigham M. Scott, a director of the company, is the new president; John B. Goodell continues as treasurer, and the remaining directors are S. Foster, H. Goodwin and H. W. Chamberlain.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

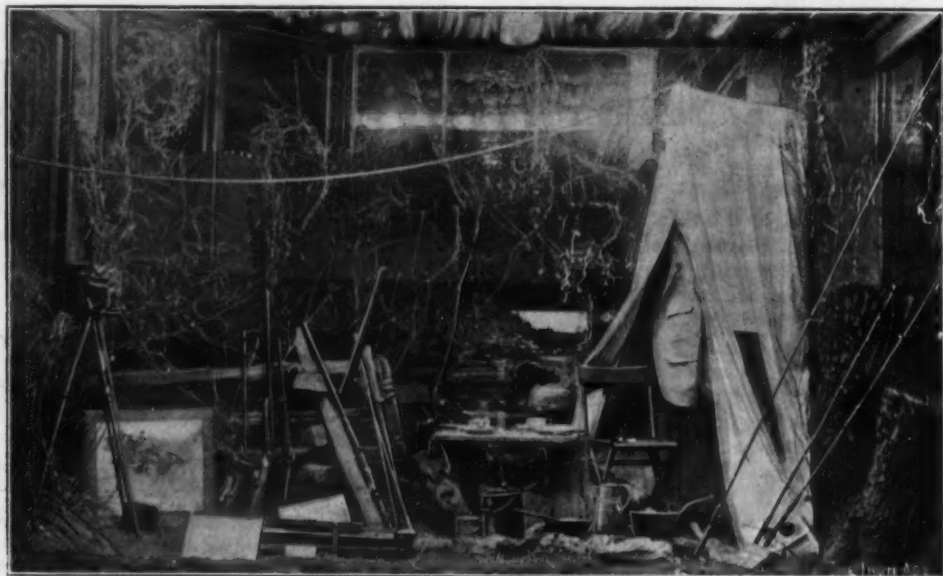
CAMPING OUT WINDOW DISPLAY.

E. N. HOWELL HARDWARE COMPANY, Dixon, Ill., which gives much attention to the attractive display of goods in the show window, recently caught the notice of the public with the camping out exhibit illustrated herewith. A small "A" Tent was set up in one corner, with a camp chair at the entrance, and a hunting coat hung on the pole. A pipe and bag of tobacco lay on the chair. Three Fishing Rods, with Reels, Lines and Hooks ready for use, leaned against the stump. A board laid across two low stumps formed a table, upon which were camping dishes set for a meal. In the foreground was a fire place made of rocks, with real ashes and charred

seasonable goods. It is copiously illustrated and is accompanied by a pink sheet termed "Bargain List," in which attractive prices are named on the goods covered.

COURAGE, ENTERPRISE.

A WELL PRINTED booklet has been issued by H. W. Mills & Co., Paterson, N. J., which gives a good idea of the extent of their business and the facilities for its conduct. This firm was among the many who were burned out in the great conflagration which visited that city a year or two ago, all that remained of their store being referred to as a "mass of charred ruins, with nothing left but some fire scorched insurance policies that



Camping Out Window Display.

sticks, a Coffee Pot, Fry Pan and Sauce Pan resting over the ashes on an Iron Grating such as campers use. The rocks and Utensils had been previously smoked so as to look realistic. A red electric light lay in the ashes and a Camp Axe rested against a half chopped stick of wood nearby. Guns and Cartridge Belts were supported by the fence. Near the front was a folded Camp Bed lying on the grass, and on the extreme left of the window was a Camera mounted on a Tripod. A window card propounded the query, "Isn't there something here that you can use on your vacation?" The upper portion of the cloth background was of a dark red, the lower part being black. The picture of the elk was set into the background to give depth to the scene. Tarred paper was laid on the floor and covered with fresh dirt, edged with newly cut sod. The shrubs were cut just before the buds were ready to burst into leaves. The vines were last year's morning glories. The other window at the same time was used to good advantage in an extensive and tasteful display of cheap Watches, an exhibit which, by the way, enabled the firm to dispose of many goods of this class.

BARGAIN LIST.

RUSSELL & GRADOLPH, Petersburg, Mich, have recently distributed their seventh annual spring circular, in which attention is invited to a large variety of

we prized very highly." The booklet presents views of the new main store and its different floors and departments, the storehouse exterior and interior, the outside and inside of their branch store in another part of the city, the last illustration, under the caption "Horses and Wagons," indicating that the firm's delivery service is such as to insure the prompt and careful handling of orders. The half-tone illustrations are all on the left hand pages, the comments appearing on the opposite pages.

PAINTS AND PAINTERS' SUPPLIES.

A PENNSYLVANIA Hardware merchant who has found satisfaction and profit in handling Paints and Painters' Supplies writes as follows in regard to the desirability of handling high quality goods in this line:

It has been our policy to handle a strictly first-class line of Paints and Painters' Supplies, as we feel that we cannot afford to injure our reputation by selling inferior goods. A cheap grade of Paint is compelled to compete with catalogue house Paints, but a Paint with a reputation for quality is so far above the cheap catalogue house stuff that there is no comparison whatever. We know on good authority that one of the large catalogue houses recently tried to place the contract for their Paint at 50

cents a gallon, which is about one-half what it costs to make a good Paint.

We think that a poor grade of Paint sold by a Hardware dealer will not only prove a slow seller, but will injure his regular business by lowering his reputation as an honest dealer. We believe that honest goods at honest prices, coupled with honest treatment, will in the end bring one a class and volume of trade that he may well be proud of.

SPRING CATALOGUE.

A. M. MATTHEWS & CO., Orange, N. J., have recently issued a spring catalogue in which they call attention to seasonable Hardware as well as to Seeds, Garden Tools, Fertilizers, Paints, &c., with prices. One of the pages of the catalogue is reproduced (reduced from 10½ x 7 inches) herewith to show the style followed. On the cover reference is made to other departments of their business, including mason material, lumber, coal, grain, &c.

Five thousand of these catalogues were printed, of which about 1500 were mailed to a select list. The balance were distributed at the store and through the newsstands, the newsdealers being reimbursed for putting a copy of the catalogue in every paper sold by them. In this way the firm was enabled to reach, it advises us, many who were not on the mailing list. The approximate cost of

ary, when the weather was not conducive to gardening operations. In less than two days after the first lot had been mailed an inquiry was received from an entire stranger to the store, whose name had been taken from the telephone directory and who was desirous of purchasing about \$20 worth of Seeds, &c., and promises to develop into a valued customer. Not only this, but the firm finds that the outside trade often bring the catalogue along with them when they come to purchase, pointing out the items in which they are interested, and thus giving direct evidence that the booklet sells goods.

MANUFACTURERS' PRINTED MATTER.

To the Editor: In a recent issue of *The Iron Age* I noticed the letter of a Pennsylvania merchant to the effect that manufacturers do not render sufficient help to the retail merchant in advertising his wares.

Criminal Waste and Carelessness.

It has been my experience in quite extensive travel and observation that a great deal of printed matter upon which manufacturers have spent considerable time and money is neglected or entirely wasted by the retailer. This fact may astonish your Pennsylvania correspondent, for he seems to be one of the progressive class which gladly makes use of these little circulars.

I have seen bushels of them thrown away where they might have been made to do the store untold good. In other cases I have known merchants who would not take the trouble to print their names and addresses before giving them out. Still others stamp them in a slovenly manner with a rubber stamp, but even this is better than throwing them away or sending them out blank.

A Good Indication.

The fact, however, that there is an increased demand upon manufacturers for this class of advertising matter is a sign that many merchants are becoming aroused to the importance of the use of such printed matter. The more that is used—and the more carefully it is put out—the better it will be for everybody concerned. Every package leaving the store should carry some leaflet or circular calling attention to goods which the merchant has for sale. In this way it is bound to get directly into the homes and is pretty sure to bring results.

OBSERVER.

SOUTHERN ENTERPRISE.

UNDER the title "1884 to 1905, Our Growth 21 years," an interesting little booklet is issued by the King Hardware Company, Atlanta, Ga., in which the development of the business is graphically set forth. The floor space of the company at its birth was 3300 square feet. Now it is said to be 139,000 square feet, the company having four stores in Atlanta, as well as establishments at Columbus and La Grange, Ga., and Sheffield, Ala. At the company's principal store, 51-55 Peachtree street, what is termed an "Indoor Exposition, Floral Display, Musical Festival" has just been concluded. It began on the 4th inst. and continued for the remainder of the week. There was a fine display of Hardware and allied lines, with numerous demonstrations by experts, and the many visitors were served with a good lunch.

THE RETAIL HARDWARE DEALERS' MUTUAL FIRE INSURANCE COMPANY of Minnesota, of which M. S. Mathews is secretary, 323 Boston Block, Minneapolis, Minn., issues a postal in which a brief statement is given of the very satisfactory financial condition of the company at the end of March 31. A booklet, entitled "Mutual Insurance the Way Out," shows how Hardware merchants can save a good deal of money by insuring with the company.

CATALOGUE A. M. MATTHEWS & CO.

Painters' Supplies.

Alum, Alcohol (Wood), Benzine.
Colors, (Dry, in Oil, in Japan.)
Bronzes—Gold, Silver, Copper
Aluminum and Branning Liquid.
Glue, Emery, Sand Paper
Gasoline, Lead (Dry and in Oil,
White and Red).
Naphtha, Raw and Boiled Linseed Oil.
Crude Oil, Floor Oil, or Dyeing.
Ground and Lump Pumice, Rotten
Stone, Turpentine.

PUTTY KNIVES. WALL SCRAPERS.
10c up. 15c up.
Cabinet Scrapers.

PAINT AND VARNISH BRUSHES.

Sash Tools. . . . 5c to 35c
Varnish Brushes. . . 5c to 75c
Wall Brushes. . . . 20c to \$2.25
Paint Brushes. . . . 25c to \$2.25
Whitewash Brushes. . 10c to \$1.50
Katsomine Brushes.

**POUND BRUSHES, Paper Hangers,
Brushes and Tools.**

POLISHING FELT GOLD LEAF.

MONOLAC

In all Colors and Natural.

THIS is positively the best and most satisfactory Varnish stain on the market. We guarantee it to give results that will be sure to please if you use it according to directions.

Atlantic White Lead.

We carry a complete line of
GILLESPIE'S VARNISHES
Light Hard Oil, Coach, Interior
Floor, Spar Varnish, Iron Enamel
Black Asphaltum, Orange and White
Shellac, Branning Liquid, White Cement

VARNISH REMOVER.

Page from Spring Catalogue, Reduced from 7 x 10½ Inches.

the catalogues was about 4 cents each, and they required a 2-cent stamp for mailing. The mailing list of the firm was prepared first from the charge accounts, which supplied more than 1000 names; then the telephone directory was consulted, and these names, with those procured from other sources, furnished about 500 more.

The firm has now been getting out spring catalogues for seven years, starting with an eight-page pamphlet and steadily enlarging. It has been found a very profitable proposition, as some new and desirable trade has been picked up each year. For instance, this year the firm began to mail the catalogues about the middle of Febru-

tings (Fig. 3), it is seen by the card that the "Form No." of the quotation sheet last sent them was *na*. Referring to this sheet in the binder, the base discount on the goods quoted is found to be 66 2-3 per cent. The card also states that 10 per cent. beyond this has also been allowed. Quotations on Tools are found in the same manner.

Fig. 4.—Postal Card Form for Withdrawing Quotations.

Before a new quotation sheet is sent out the old one is called in by means of postal card shown in Fig. 4.

Special Quotations

are kept on file by the vertical letter filing system. They are kept in the conventional cabinet, in a blue folder immediately following the folder containing the correspondence chronologically arranged. A special point is made to have only one class of goods, such, for example, as Screwed Iron Pipe Tees, quoted in each letter. Again referring to Fig. 3 it will be seen that the dates of the letters giving prices are placed in the column under "Special Quotations." Also the figure number of the goods quoted is given where the goods are not too special. Where a figure number is impracticable a word is generally sufficient as a cue to the quotation desired. By referring to the file number in the upper right hand corner of the quotation card the file of the customer is found. Thus it is easy to find the quotation either by the cost or quotation card. The arrangement for special quotations recorded on the quotation card by date of letter as described above is, however, generally sufficient to fill every requirement and displaces the system of copying on the card contents of letter and filing under customer's name.

Malleable Fittings Quoted Separately.

Malleable Fittings are quoted separately by a card similar to Fig. 5, as these Fittings are sold by the pound.

Fig. 5.—Quotation Card for Malleable Fittings.

The quotations are recorded in the general quotation column of the card (Fig. 3), there being no base discount given in this line.

(To be continued.)

STERLING EMERY WHEEL MFG. COMPANY, Tiffin, Ohio, is distributing among its friends and customers Sterling emery match safes for desk use, which will doubtless be appreciated by those who receive them. A blotter on the rough bottom of the match safe protects the desk from injury.

THE DISADVANTAGES OF JOBBERS' NET PRICES.

FROM a Western Hardware house we have the following letter in which it refers to the trouble sometimes occasioned retail merchants by the quotation of net prices by Hardware jobbers, inasmuch as such price sheets frequently get into the hands of parties who are not entitled to them. On this subject our correspondent says:

These net price sheets, while a great convenience to us at times, are, nevertheless, one of the worst things (perhaps the worst) that have happened to the regular hardware merchant for a long time. These price sheets and the jobbers' catalogues in connection with which they are issued find their way into the hands of the druggist, the dry goods man, the grocer, the furniture dealer, the racket store and others, who are thus put in a position to make a price on almost any article that the Hardware merchant sells.

Of course jobbers, some of them at least, exercise care in sending out this matter with a view to confining it to the hands of the legitimate Hardware trade, but they are absolutely powerless to keep many of the above-mentioned parties from getting it. In the small towns, too, the jobbers have no hesitation in sending the price sheets to the general stores.

The regular Hardware merchant can find the price of almost any article that belongs to his line. He has his trade journals, and from them and the quotations that come to him unsolicited as well as those he asks for, he can keep himself posted. This is his stock in trade and is his education which cannot be

Net Price Sheets Unnecessary

stolen from him by the grocery man and other outsiders. But with the jobbers' net price sheet and catalogue in the hands of the grocer next door he is very little if any smarter than the man selling prunes.

We think the loose leaf catalogue is a great improvement on the former volumes, but the advantages of the net price sheets are very much overbalanced by the disadvantages connected with their use.

WITTE HARDWARE COMPANY'S NEW WAREHOUSE.

THE WITTE HARDWARE COMPANY, St. Louis, Mo., has had plans drawn and is now preparing for the erection of a large warehouse and shipping department on North Second street, just east of its present house at 704-706 North Third street. The new structure will have a frontage of 135 feet on Second street, a depth of 110 feet to Collins street, and will be six stories high, giving a floor space of nearly 90,000 square feet. Four electric elevators—two for incoming and two for outgoing freight—will expedite the movement of business. The stock of goods will be removed from the Third street warehouse to the new building, and the old structure will be remodeled. A bridge will connect the two buildings for the transportation of passengers and light goods, and the offices and sample rooms will have a complete system of telephones to connect with every department in the new structure.

L. S. STARRETT, head of the L. S. Starrett Company, Athol, Mass., manufacturer of Mechanics' Tools, was given a complimentary banquet by the business men and others of his town March 29 in appreciation of the great benefits that he and his industry have conferred on Athol, and also because of his liberality to the Methodist church in giving a pipe organ and \$3000 toward the purchase of a parsonage. The banquet was held in the church, covers being placed for 200 ladies and gentlemen. There was appropriate after dinner speaking, in which the history of the L. S. Starrett Company was entertainingly reviewed from the time of its establishment in 1880, with ten employees on the pay rolls, to over 400 employees to-day.

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AMONG THE HARDWARE TRADE.

B. Lyons has disposed of his Hardware business in Everett, Kan., to H. A. Price & Co., who continue at the old stand.

Palo Alto Hardware & Implement Company, Emmetsburg, Iowa, has been organized with a capital stock of \$20,000. The company's lines include Shelf Hardware, Stoves and Tinware, Agricultural Implements, Paints, Sporting Goods, &c.

Carl Nelson has purchased H. F. Henderson's interest in the Osceola Hardware & Furniture Company, Osceola, Neb.

C. M. Pattillo Hardware Company, Stamford, Texas, incorporated with a capital stock of \$20,000, has succeeded C. M. Patillo & Son in the wholesale and retail business. The company expects to build a new store later in the year.

George de Bey of Rock Valley, Iowa, has bought the Hardware business of Wilcox & Co., Doon, Iowa, and will continue at the old stand.

M. E. Mayer is successor to C. T. Gahn in the Hardware, Stove, Implement, Paint and Sporting Goods business at Mt. Cory, Ohio.

H. D. Hull, Troy, N. Y., a veteran Hardware merchant, has admitted to partnership A. A. Davidson and Myron J. Coonradt, both of whom have been identified with the business for many years, and the style has been changed to H. D. Hull & Co.

A. E. Jackson has lately opened up in the Shelf and Heavy Hardware, Stove, Implement, Paint and Sporting Goods business at Fulton, S. D.

J. P. Raven has bought the Hardware, Stove and Paint business formerly conducted by M. A. McCarthy at Hartland, Minn.

C. W. Laing has succeeded Laing & Pierce in the General Hardware business at Montezuma, Iowa.

Henry Richardson has bought out Chas. Duckworth in the Hardware, Stove and Paint business at Cedar Bluffs, Kan.

Johnson & Hollowell, in the Hardware, Vehicle and Harness business at Orleans, Ind., have dissolved partnership, A. E. Hollowell retiring. Homer F. Johnson and John M. Frost will continue under the style of Johnson & Frost.

W. T. Godfrey has succeeded W. T. Godfrey & Co. in Hardware, Stoves, Paints, Sporting Goods, &c., at Shoshone, Idaho.

The White Hardware Company has been incorporated with a capital stock of \$25,000, succeeding McCarthy Hardware Company at Burr Oak, Kan. The White Company will build a new store, 46 x 100 feet in dimensions.

Frank Forsyth has purchased Charles Donahue's Hardware, Stove, Implement and Paint business at Holcomb, N. Y.

Bradberry Bros. have entered business at Hurley, S. D., handling Shelf and Heavy Hardware, Stoves, Paints, Implements, Sporting Goods, &c.

Barnesville Mercantile Company has purchased the Hardware business formerly conducted by Elias Morrell in Barnesville, Kan.

*In the list of the members of the New York State Association of Retail Hardware Dealers in our issue of

March 23, the name of George Johnston, Fulton, N. Y., was inadvertently omitted. Mr. Johnston is proud of his membership in the association and is quite willing that the fact should be known.

A. Alberts Hardware Company, Muskegon, Mich., has recently been incorporated.

J. W. Bradbury has sold his Hardware, Stove and Sporting Goods stock at Cowden, O. T., to H. F. Rhodes.

MISCELLANEOUS NOTES.

House Furnishing Wire Specialties.

The National Mfg. Company, Worcester, Mass., and 103 Chambers street, New York, manufacturer of wire goods for house furnishing purposes, &c., has added a number of new articles to its line. One of them is an extra large potato masher, similar to smaller ones it manufactures, but of heavy retinned wire and large, strong handle. It is designed for use in hotels, restaurants, clubs, boarding houses, &c. Other articles are a vegetable skimmer of larger capacity than previously made and three-line wire forks of extra length for hotel kitchen use. The company has also added several nickel plated wire soap brackets, sponge racks, folding card racks, suitable for bathrooms, lavatories, &c., and beaters in two sizes, one for furniture, clothing, hanging draperies, &c., and the other much larger for rugs and carpets, the two latter specialties being entirely new.

The Queen Ball Bearing Lawn Mower.

The Granite State Mowing Machine Company, Hinsdale, N. H., has added to its line for the present season the Queen ball bearing lawn mower, which has been put on the market to meet the demand for a 10-inch wheel ball bearing machine at a low price. The mower does not differ substantially in style from other makes on the market, except that the company has endeavored to make it stronger in construction and better finished than other machines offered at the same price.

Carpet Sweeper Anti-Tipping Device.

The Goshen Sweeper Company, Grand Rapids, Mich., has improved its better grades of carpet sweepers by the addition of an anti-tipping device. By means of this the bail is steadied so as to do away with all possible rattle; at the same time the sweeper case is held so that as the sweeper is drawn backward it cannot tip upward and drop the dirt.

American Screen Door Catch.

To prevent the warping of doors, especially screen doors, which frequently become so misshapen that a

ting. The catch outfit is packed complete, including catch, staple and screws, in a stout envelope. Twelve such packages are inclosed in a neat carton, with swing

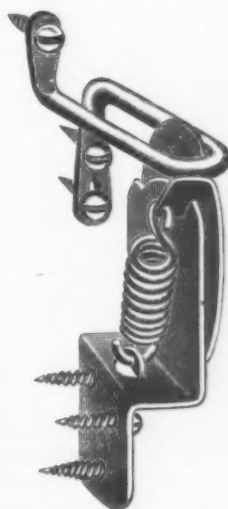


Fig. 1.—American Screen Door Catch.

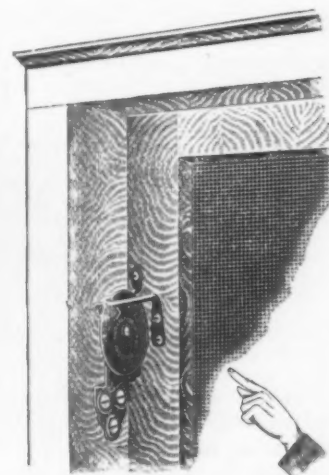


Fig. 2.—Catch Applied.

back cover and colored display card. To insure that the catch is rightly placed on the door a paper templet is packed with each set. The purchaser of the outfit bends the templet at right angles along a scored line and applies

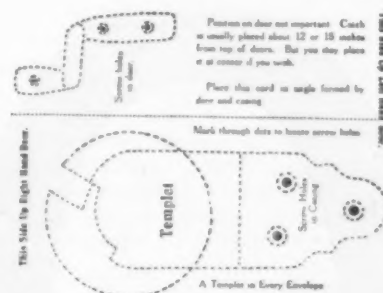


Fig. 3.—Card Templet for Installing Catch.

it to the point on his door where the catch will do the most good, thus locating the position of screw holes in the door and jamb. A sample catch complete will be sent to any hardware dealer gratis.

Carpenters' and Machinists' Level No. 1D.

Stratton Bros., R. O. Stetson, proprietor, Greenfield, Mass., are putting on the market the level shown in the



Fig. 1.—Carpenters' and Machinists' Level No. 1D.

crevice is left at the top, the American Hardware Mfg. Company, Ottawa, Ill., has devised the door catch here illustrated. This catch is intended to hold doors, flush or lapping, right or left swing, in or out, and is made in sizes ranging from the requirements of light covered doors to heavy storm doors. It will be seen that a hook on the door engages a notch in a revolving spring impelled plate or disk. Closing the door pushes a staple into the notch of the disk and actuates a spring which draws the door tight. To open the door, a quick push releases the spring and permits the disk to revolve in a backward direction. This catch on a screen door placed where warping becomes noticeable will right the door and keep out insects, at the same time preventing annoying rat-

te. The corners are bound as shown in Figs. 1 and 2 with heavy square end top and end plates.

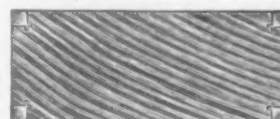


Fig. 2.—Cross Section of No. 1D Level.

The level also has a low cut side view. The level is made in 26, 28 and 30 inch sizes.

The Always Sharp Calks.

Always Sharp Calk Mfg. Company, 54 Taylor street, Springfield, Mass., is offering the calk shown in the accompanying cuts. The object of the calk is to prevent horses slipping on icy pavements and roads. The calk comprises points of different lengths having a progressive arrangement, so that when the edge of one point becomes



Fig. 1.—The Always Sharp Calk.

worn the edge of the next comes into use, and so on throughout the series, thus obviating frequent sharpening, and at the same time always having a sharp edge to make positive engagement with the slippery surface and insure a firm footing. There are three wedge shaped blades to each calk, or 48 cutting edges to one set of calks. They can be put in or taken out with an ordinary wrench without removing the shoe. It is not necessary that the calk should be screwed in flush with the shoulder, as the threaded shank is slightly tapered and binds tightly, thus preventing turning. The shank is hardened and, it is re-



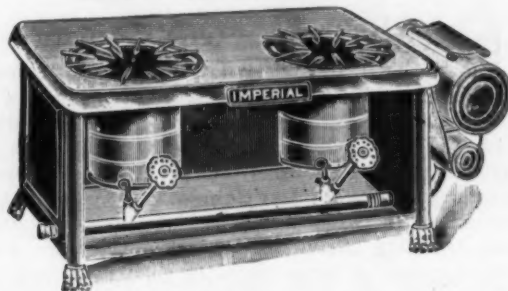
Fig. 2.—Application of Calks.

marked, will not break off in the shoe. The long point of calk may face front or rearward, working equally well either way. The calk is made of fine tempered steel. When all the points are worn smooth they make an excellent mud calk, being square and flat, giving the animal a good surface to stand upon. It is pointed out that the calks have the same thread as all other screw detachable calks, so a blacksmith can put them in. The calks are made in six sizes, for horses weighing from 800 to 1800 pounds. The company is prepared to furnish calk taps.

Standard Hardware Company and Morgan & Bunnell, Akron, Ohio, have consolidated under the style of the Hardware & Supply Company, and will conduct a wholesale and retail business in Shelf and Heavy Hardware, Sporting Goods, Builders', Mill, Mine and Factory Supplies, &c. J. Edward Good is president; Crowell Morgan, vice-president; W. W. Wohlwend, secretary, and E. S. Bunnell, treasurer.

Imperial Blue Flame Oil Stove.

Silver & Co., 304-314 Hewes street, Brooklyn, N. Y., have put on the market the Imperial blue flame oil cook stove, with two burners, as here illustrated, and designed to meet a demand for a moderate priced stove. While constructed of cheaper material than their Brooklyn pattern, the company guarantee it in every way. It is 12 inches high, 30 inches long, top 15 x 23½ inches, tank capacity 1 gallon and weighs, crated, 29 pounds. The same pattern is made with three burners with same height and tank



Imperial Blue Flame Oil Cook Stove.

capacity, but 42 inches long and top 35½ x 15 inches, weighing crated 40 pounds. Both have a cabinet finish.

The Ridlon Tool Box.

The Ridlon tool box, shown in the accompanying illustrations, is designed for the use of tool makers, die makers and machinists, the idea being to secure the maximum of order and compactness. The box has

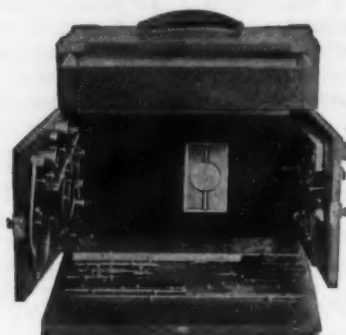


Fig. 1.—Ridlon Portable Tool Box, Open.

an outside door and three inside doors, all useful in accommodating tools. The back is deep enough for box tools, such as micrometers and indicators. The drawer is 13 inches long, 6 inches wide and 2¼ inches deep. The



Fig. 2.—Box Partially Closed.

box is finished in the natural wood and is lined with plush. It is manufactured by the F. M. West Box Company, 225 Liberty street, Springfield, Mass.

Forward Dump Wheelbarrows.

Sterling Wheelbarrow Company, 243 Grove street, Milwaukee, Wis., is offering the forward dump wheelbarrows shown in the accompanying cuts. The load is dumped from the front instead of the side, which, it is remarked,



Fig. 1.—Workingman's Friend Wheelbarrow.

has proven a much easier and more satisfactory manner of dumping, as the load slides off with very little effort in exactly the desired spot, eliminating strain on the barrow. Because of the particular slant of the tray the load will not run out of the front of the barrow unless it is tilted for dumping. The tray extends over the wheel

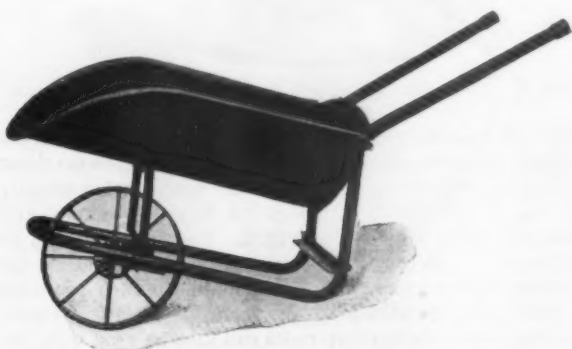


Fig. 2.—Acme Wheelbarrow.

considerably, thus balancing the load over the wheel. It is explained that this principle takes the weight of the load from the arms and throws it on the wheel, and in this way makes it possible to carry a heavy load with little effort. These barrows and others made by the company are mounted on its patent frictionless roller bearings. The barrows are referred to as being of the best material and workmanship.

Scientific Glue Heating Equipment.

The Advance Machinery Company, Toledo, Ohio, manufacturer of the Wetmore glue heaters, has recently



Fig. 1.—Scientific Glue Heater, Single.

put on the market the Scientific glue heating equipment, here illustrated. The accompanying illustrations show

the general construction, consisting of a cast iron jacket, with steam chamber in bottom, portable copper glue pot and a patent independent brass valve for governing supply of steam. Any number of these individual heaters may be attached to a line of steam pipe, arranged on the workman's bench to meet his requirements. Steam enters the steam chamber in the cast iron jacket, making complete circuit, the exit being at the opposite end of the valve. Any temperature may be maintained. The

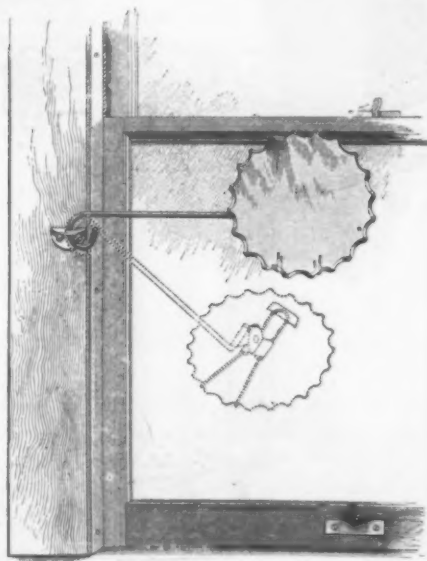


Fig. 2.—Showing Construction Details.

independent feature of this valve permits the heating of each pot independent of all others, as steam may enter as above explained, or, by reversing the valve key, pass directly through the valve. The consumption of steam by this method is reduced to a minimum. It is especially recommended by the company for large establishments, but may be used to advantage in shops of ordinary size, as any number of pots can be installed.

Boucher Adjustable Shaving Glass.

The Caldwell Mfg. Company, 8 and 10 Jones street, Rochester, N. Y., manufacturer of hardware specialties, is marketing its Boucher adjustable shaving glass here illustrated. It is designed for use in shaving and is a convenience for dressing room, bathroom and general toilet use. It consists of a chipped edge 7-inch plate



Boucher Adjustable Shaving Glass.

glass mirror, supported by a nickeled bracket. It can be fastened to the window casing, and so adjusted as to catch a strong light upon either side. The bracket which supports the mirror may be easily raised or lowered to any height and the mirror fixed at any angle. The glass is protected by a metal back, and when not in use the mirror may be dropped against the wall or casing, thus occupying little space.

F. H. Sparks is successor to Pagosa Hardware Company at Pagosa Springs, Col.

Automatic Nail Keg and Barb Wire Truck.

The truck illustrated herewith is designed to handle nail kegs, barb wire, field fence, barrels, &c., in an easy, practical and quick manner. A keg of nails or a spool of barb wire need not be touched with the hands, the truck being simply run up to either of these articles and when



Automatic Nail Keg and Barb Wire Truck.

placed in a vertical position against a keg or spool it automatically engages with it and the truck is pulled over into a position for wheeling. The truck is light and easily carried under the arm; it will go through any opening that a nail keg will, and if used for the purpose of trucking nails to the retail bins it may also be used to knock in the head of the keg. The truck is offered by C. A. Peck Hardware Company, 200 Huron street, Berlin, Wis.

Volcano Torches.

The accompanying illustrations represent two of the various designs of gasoline torches offered by the Volcano Torch Company, 237 East Seventeenth street, Erie, Pa., a few of the features and uses of which are noted below. The torch shown in Fig. 1 can be used either portable as a hand torch or stationary for bench and other kinds of

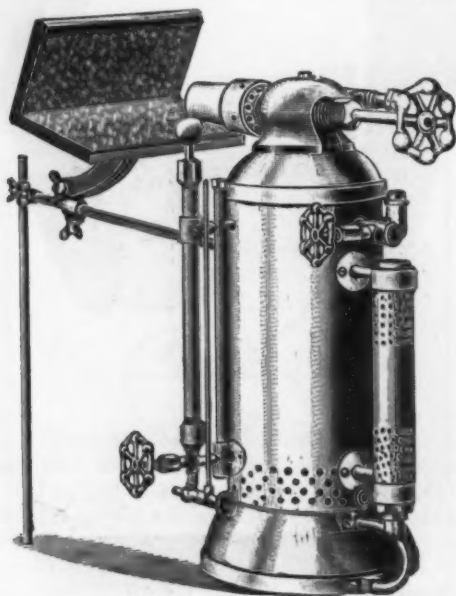


Fig. 1.—The Volcano Torch.

work, with or without fire back, in storm or rain, or in any kind of weather or temperature. It can be filled when in action and can therefore be kept in operation indefinitely. It keeps up its own pressure for any length of time and no air pump is required. The torch has a steel cylinder serving as a tank or body, brazed and stay bolted and capable of resisting a pressure of 2000 pounds per square inch. It is supplied with a safety valve to call the attention of the operator in case there is any undue pressure within the cylinder. The device has an ordinary No. 3 lamp burner in place of a starting cup,

The burner heats the generator and keeps up the pressure of the torch. The torch is especially designed for use in machine shops and toolrooms for straightening shafts between lathe centers, including armature and crank shafts. It is also effective for tempering, brazing,

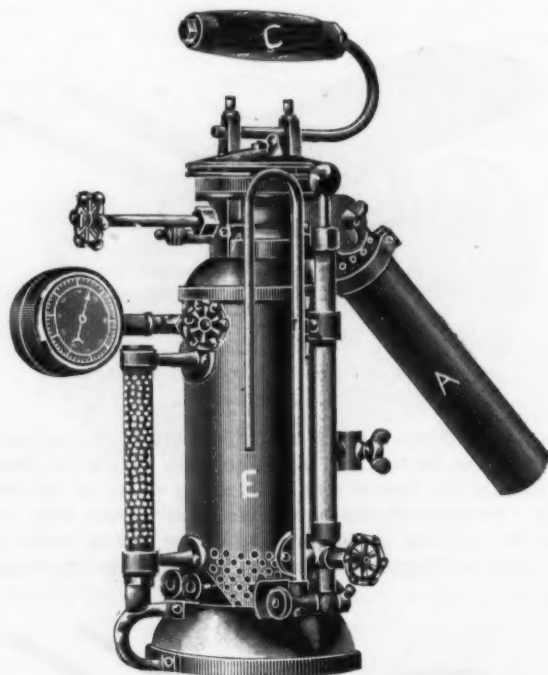
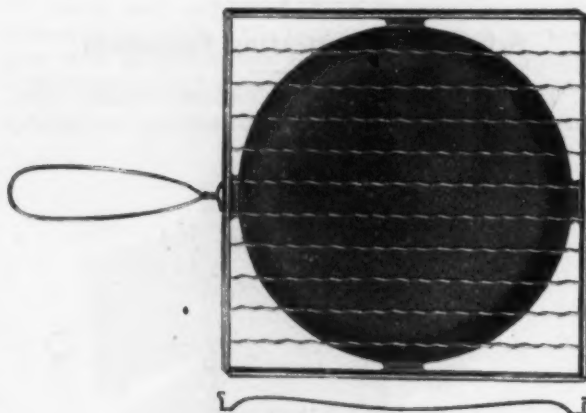


Fig. 2.—The Volcano Tinnners', Roofers' and Painters' Torch.

&c., and may be carried under the seat of automobiles for making necessary repairs. The torch is likewise fitted with adjustable burners, and another modification permits its use as a forge and furnace. A tinnners', roofers' and painters' torch is shown in Fig. 2. The burner A can be adjusted to different degree angles. A special nozzle for opening seams on roofs can be supplied, which produces a narrow, elongated flame. A furnace for heating soldering coppers in shops or on roofs can also be used with the torch. The handle C permits the torch to be conveniently carried and operated. The torch is provided with a safety valve and pressure gauge, and can be operated under a working pressure of 10 to 180 pounds.

Standard Bread Toaster.

The Standard Stamping Company, Marysville, Ohio, is manufacturing the Standard bread toaster here shown, the detached figure at the bottom indicating the outline of center. The toaster is intended for toasting bread



Standard Bread Toaster.

only, and can be used in connection with gas, gasoline, oil or coal stoves. It is said to make no difference how many slices, within the capacity of the toaster, or where placed, the bread will be evenly toasted over any kind of a fire.

Royal Tea and Coffee Pots.

W. H. Sweeney Mfg. Company, 66-72 Water street, Brooklyn, N. Y., for which W. A. Lawrence & Co., 10



Fig. 1.—Royal Nickered Copper Tea Pot.

Warren street, New York, are direct representatives, has recently added to lines of similar goods the Royal nick-



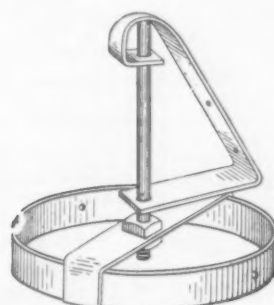
Fig. 2.—Royal Nickered Copper Coffee Pot.

eled copper tea and coffee pots here illustrated. They have seamless silver lined bodies with ornamented handles and spouts of white metal. Fig. 1, tea pot, is a low

pattern, which is also typical of a coffee pot of the same design, both of which are known as No. 172 series, the coffee pot having a hinged white metal lip, resembling that seen in Fig. 2. The covers and knobs are embossed, and both tea and coffee pots are made in 2, 3, 4 and 5 pint sizes. The coffee pot has a muslin strainer at top for percolation, held in position by a metallic ring. By this process a portion of finely pulverized coffee is placed in the strainer on which boiling water is poured, to produce a wholesome infusion without extracting the tannic acid by boiling the coffee itself. This gives a clear wine colored liquid without the use of clearing or settling agents. Fig. 2 represents a somewhat higher pattern, No. 192 series, also made in tea pot style similar to Fig. 1, both of which are made in 2, 3, 4, 5 and 6 pint sizes, and to which the foregoing description applies.

Dunlap Unbreakable Chimney Top.

We illustrate herewith an unbreakable revolving chimney top made by the Dunlap Mfg. Company, Dunlap, Iowa. This device is made throughout of wrought iron, hence the term unbreakable. The frame upon which the



Dunlap Unbreakable Chimney Top.

local metal worker rivets the hood rests on a round pointed upright post, reducing the frictional resistance to the minimum. The maker of the top refers to the construction as one which cannot clog with rust or soot, and calls attention to the method of shipping the device, knocked down in such a shape that it occupies a very small amount of space.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

Lead, English white, in Oil..	9% @ 9%
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
In Barrels.....	@ 6
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ 1/2
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
ass't tins, add to keg price ..	@ 1 1/2
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	@ 6
Lead, White, Dry in bbls.....	@ 6
Zinc, American, dry.....	4% @ 4%
Zinc, French.....	5%
Paris, Red Seal, dry.....	5%
Paris, Green Seal, dry.....	5%
Antwerp, Red Seal, dry.....	7%
Antwerp, Green Seal, dry.....	7%
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	11% @ 12%
Lots of less than 1 ton.....	12% @ 12%
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	10% @ 11 1/4
Lots of less than 1 ton.....	10% @ 11 1/4
Discounts—French Zinc—Discounts	
to buyers of 10 bbl, lots of one or mixed	
grades, 1 1/2; 25 bbls., 2%; 50 bbls., 4%.	

Dry Colors—

Black, Carbon.....	@ 10
Black, Drop, Amer.....	@ 6
Black, Drop, Eng.....	@ 6
Black, Ivory.....	@ 16
Black, Celestial.....	4% @ 6
Blue, Chinese.....	2 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	4% @ 15
Brown, Spanish.....	4 @ 1
Carmine, No. 40.....	\$3.55 @ 4.00
Green, Chrome, ordinary.....	3% @ 6

Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 6 1/2
Lots less than 500 lb.....	@ 7
Litharge, American, bbls.....	6% @ 6 1/2
Ocher, American.....	@ ton \$8.50 @ 16.00
Orcher, American Golden.....	2% @ 3 1/2
Orcher, French.....	1% @ 2 1/2
Orcher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	8% @ 10 1/2
Orange Mineral, French.....	10% @ 11 1/2
Orange Mineral, German.....	7% @ 10
Orange Mineral, American.....	4% @ 8 1/2
Red, Indian, American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer. @ 100 lb \$0.50 @ 1.25	
Red, Venetian, English, 100 lb \$1.15 @ 1.75	
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9 1/2
Sienna, Ital. Raw, Powd.....	3 @ 6 1/2
Sienna, American, Raw.....	1 1/2 @ 2
Sienna, American, Burnt and	
Powdered.....	1 1/2 @ 2
Talc, French.....	@ ton \$3.00 @ 30.00
Talc, American.....	@ ton 16.00 @ 25.00
Terra Alba, French.....	@ 100 lb 90 @ 1.00
Terra Alba, English.....	@ 100 lb 90 @ 1.00
Terra Alba, American, @ 100	
lb, No. 1.....	60 @ 70
Terra Alba, American, @ 100	
lb, No. 2.....	45 @ 50
Umber, Turkey, Bnt. & Pow.....	2 1/2 @ 3 1/2
Umber, Turkey, Raw & Pow.....	2 1/2 @ 3 1/2
Umber, Burnt, Amer.....	1 1/2 @ 2
Umber, Raw, Amer.....	1 1/2 @ 2
Yellow, Chrome.....	11 @ 11
Vermilion, American Lead.....	10 @ 25
Vermilion, Quicksilver, bulk.....	@ 65
Vermilion, Quicksilver, bags.....	@ 65
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	\$0.90 @ 1.00

Colors in Oil—

Black, Lampblack.....	12 @ 14
Blue, Chinese.....	3 @ 46
Blue, Prussian.....	32 @ 36
Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	10 @ 15
Green, Paris.....	@ 24

Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

Miscellaneous—

Barytes, White, Foreign.....	
@ ton \$17.50 @ 19.00	
Barytes, Amer. floated, @ ton 17.00 @ 19.00	
Barytes, Crude, No. 1, @ ton 10.00 @ 11.00	
Chalk, in bulk.....	@ ton 3.00 @ 3.25
Chalk, in bbls.....	@ 100 lb 7% @ 35
China Clay, English.....	@ ton 11.00 @ 17.00
Cobalt, Oxide.....	@ 100 lb 2.50 @ 3
Whiting, Common.....	@ 100 lb 45 @ 48
Whiting, Gilders.....	@ 100 lb 55 @ 57
Whiting, Ex. Gilders.....	@ 100 lb 58 @ 60

Putty, Commercial—@ 100 lb	
In bladders.....	\$1.70
In bulk.....	1.05 @ 1.10
In cans, 1 lb to 5 lb.....	2.00 @ 2.90
In cans, 12 1/2 to 50 lb.....	1.40 @ 1.55

Spirits Turpentine—@ gal.	
In Oil bbls.....	65 1/2 @ 66
In machine bbls.....	66 @ 66 1/2

Glue—	
Cabinet.....	11 @ 15
Common Bone.....	7 @ 9
Extra White.....	18 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 40
Irish.....	13 @ 16
Low Grade.....	9 @ 12
Medium White.....	14 @ 17

Gum Shellac—	
Bleached Commercial.....	32 @ 33
Bone Dried.....	42 @ 43
Button.....	36 @ 45
Diamond.....	50 @ 52
Fine Orange.....	40 @ 45
A. C. Garnet.....	34 @ 35
D. C. Garnet.....	1.10 @ 1.20
Octagon B.....	45 @ 50
T. S.....	32 @ 34
V. S. O.....	50 @ 52

Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	47 @ 48
Linseed, City, boiled.....	49 @ 50
Linseed, State and West'n, raw.....	45 @ 46
Linseed, raw Calcutta seed.....	55 @ 56
Lard, Prime, Winter.....	59 @ 60
Lard, Extra No. 1.....	48 @ 49
Lard, No. 2.....	36 @ 38
Cotton-seed, Crude, f.o.b. mills.....	18% @ 19 1/4
Cotton-seed, Summer Yellow.....	25 @ 25 1/2
Prime.....	25 @ 25 1/2
Cotton-seed, Summer Yellow,	
off grades.....	@
Sperm, Crude.....	60 @
Sperm, Natural Spring.....	@
Sperm, Bleached Spring.....	@
Sperm, Natural Winter.....	61 @ 63
Sperm, Bleached Winter.....	63 @ 65
Tallow, Prime.....	47 @ 49
Whale, Crude.....	@
Whale, Natural Winter.....	44 @
Whale, Bleached Winter.....	46 @
Menhaden, Brown, Strained.....	27 @ 28
Menhaden, Light, Strained.....	27 @ 29
Menhaden, Bleached Winter.....	30 @ 31
Menhaden, Ex-Bld. Winter.....	32 @ 33
Menhaden, Southern.....	17 1/2 @ 18
Cocoonut, Ceylon.....	@ lb 6% @ 6 1/2
Cocoonut, Coch.....	@ lb 7 1/4 @ 7 1/2
Cod, Domestic, Prime.....	34 @ 36
Cod, Newfoundland.....	39 @ 41
Red Elaine.....	30 @ 32
Red, Saponified.....	@ lb 14 @ 14 1/2
Olive, Italian, bbls.....	55 @ 58
Neatsfoot, prime.....	50 @ 51
Palm, Logos.....	@ lb 5 1/4 @ 5 1/2

Mineral Oils—

Black, 28 gravity, 25 @ 30 cold @ gal.	
test.....	10% @ 11 1/4
Black, 28 gravity, 15 cold test.....	11 1/2 @ 12 1/2
Black, Summer.....	10 1/2 @ 11 1/2
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 903-907 gravity.....	12% @ 13
Paraffine, 903 gravity.....	12% @ 13
Paraffine, 863 gravity.....	9 1/2 @ 9 1/4
Paraffine, Red.....	11% @ 13
In small lots 1/4¢ advance.	

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/3 @ 33 1/3 & 10% signifies

that the price of the goods in question ranges from 33 1/3 per cent. discount to 33 1/3 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00.....33 1/3%
North's.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils..... $\frac{1}{2}$ lb. 7 1/4 @ 7 1/4%
Hay-Budden, Wrought.....90%
Horseshoe brand, Wrought.....90%
Trenton..... $\frac{1}{2}$ lb. 90%
Imported—

Peter Wright & Sons..... $\frac{1}{2}$ lb. 10 1/4%

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15 & 10%

Apple Parers—See Parers,

Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33 1/3%

Augers and Bits—

Com. Double Spur.....70 & 10%
Horing Mack, Augers.....70 & 10%
Car Bits, 12-in. twist.....50 & 10%
Jennings' Patn. Reg. Finish.....50 & 10%
Ford's Auger and Car Bits.....40 & 5%
Forster Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....25%
No. 30, R. Jennings' list.....40 & 7 1/2%
Russell Jennings.....25 & 10 & 2 1/2%
L'Hommedieu Car Bits.....45%
Marble's Countersink Bits.....45%
Millers Falls.....50 & 2 1/2%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40 & 10%
Pugh's Black.....25%
Pugh's Jennings' Pattern.....25%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist.....60 & 10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$18; large, \$26.....50 & 10%
Clark's Pattern No. 1, $\frac{1}{2}$ doz. \$28;
No. 2, \$18.....50 & 10%
Ford's, Clark's Pattern.....50 & 10%
C. E. Jennings & Co., Steer's Pat.....50%
Swan's.....50%

Gimlet Bits—

Common Dble. Cut.....\$3.00 @ \$3.25
German Pattern, Nos. 1 to 10,
\$4.00; 11 to 15, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$9.00 @ \$10.00
Ames.....25 & 10%
New Patent.....25 & 10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....33 1/3 & 5%
C. E. Jennings & Co.:
L'Hommedieu's.....15%
Watrous'.....35 & 5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts—See Hafts, Awl.

Awls—

Crad Awls:
Handled.....gro. \$2.75 @ \$3.00
Unhlded, Shldered.....gro. \$3.75 @ \$4.00
Unhlded, Patent.....gro. \$6.00 @ \$7.00
Peg Awls:
Unhlded, Patent.....gro. \$1.00 @ \$1.25
Unhlded, Shldered.....gro. \$1.50 @ \$2.00
Scratch Awls:
Handled, Com.....gro. \$3.50 @ \$4.00
Handled, Socket.....gro. \$11.50 @ \$12.00
Hurwood.....40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights. (up to 3 1/2 lb.)
First Quality.....\$6.50
Second Quality.....\$6.00
NOTE.—Heavier weights add Extras as per regular schedule.

Axle Grease—

See Grease, Axle

Axles—

Iron or Steel
Concord, Loose Collar.....40 & 5 1/2%
Concord, Solid Collar.....40 & 5 1/2%
No. 1 Common, Loose.....3 1/2 @ 3 1/2%
No. 1 1/2 Com., New Styles.....40 & 5 1/2%
No. 2 Solid Collar.....75 @ 75 & 5%
Nos. 7, 8, 11 and 12.....75 @ 75 & 5%
Nos. 13 to 14.....70 @ 100 @ 75 & 5%
Nos. 15 to 18.....75 @ 100 @ 75 & 10 & 5%
Nos. 19 to 22.....75 @ 100 @ 75 & 10 & 5%

Boxes, Axle—

Common and Concord, not turned
lb. 1 1/2 @ 1 1/2%
Common and Concord, turned,
lb. 5 1/4 @ 5 1/4%
Half Patent.....lb. 8 1/2 @ 8 1/2%

Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20 & 5%

Balances— Sash—

Caldwell new list.....50%
Pullman.....50 & 10 @ 50%

Spring—

Spring Balances.....60 @ 60 & 5%
Chatillon's:
Light Spg. Balances.....40 & 10%
Straight Balances.....40%
Circular Balances.....40%
Large Dial.....50%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Crowbars, 10 to 40 lb.
per lb., 2 1/2 @ 3 1/4%

Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$ gro. \$8.50

Beams, Scale—

Scale Beams.....40 & 10 @ 50%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered $\frac{1}{2}$ doz. \$9.55;
Tinned.....\$1.00
No. 11 Wire Coppered $\frac{1}{2}$ doz. \$1.10;
Tinned.....\$1.20
No. 10 Wire Galvanized..... $\frac{1}{2}$ doz. \$1.75
Western W. G. Co.:
No. 1 Electric..... $\frac{1}{2}$ doz. \$7.80
No. 2 Buffalo..... $\frac{1}{2}$ doz. \$9.00
No. 3 Perfection Dust..... $\frac{1}{2}$ doz. \$8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned..... $\frac{1}{2}$ doz. \$1.30
Holt, No. 1, Tinned..... $\frac{1}{2}$ doz. \$1.50
Holt, No. B, Japanned..... $\frac{1}{2}$ doz. \$2.00
Holt, No. 2, Tinned..... $\frac{1}{2}$ doz. \$2.25
Lyon, No. 2, Japanned..... $\frac{1}{2}$ doz. \$1.25
Lyon, No. 3, Japanned..... $\frac{1}{2}$ doz. \$1.50
Taplin Mfg. Co.:
No. 60 Improved Dover.....\$6.00
No. 75 Improved Dover.....\$6.50
No. 100 Improved Dover.....\$7.00
No. 102 Improved Dover, Tin'd.....\$8.50
No. 150 Improved Dover, Hotel.....\$15.00
No. 192 Imp'd Dover, Hotel, T'd.....\$17.00
No. 200 Imp'd Dover Tumbler.....\$8.50
No. 302 Imp'd Dover Tumbler, T'd.....\$9.50
No. 300 Imp'd Dover Mammoth, $\frac{1}{2}$ doz.....\$22.00
Western, W. G. Co., Buffalo.....\$7.00
Wonder (S. S. & Co.), $\frac{1}{2}$ gro. net, \$6.00

Bellows—

Blacksmith, Standard List.....
60 & 10 @ 70 & 10%

Blacksmiths'—

Inch.....30 32 34 36 38 40
Each.....\$3.25 3.50 4.00 4.50 5.00 5.75
Extra Length:
Each.....\$3.75 4.25 4.75 5.25 6.00 7.00

Hand—

Inch.....6 7 8 9 10
Doz.....\$4.50 5.00 5.50 6.00 6.50

Molders—

Inch.....9 10 11 12 14
Doz.....\$8.00 9.00 10.50 12.50 14.50

Bells— Cow—

Ordinary goods.....75 & 5 @ 75 & 10 & 5%
High grade.....70 & 10 @ 70 & 10 & 5%
Jersey.....70 & 10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, H. & E. Mfg. Co.'s.....50%
Lever and Pull, Sargent's.....80 & 10 @ 10%
Trip Gong.....50 & 10 @ 50 & 10 & 5%
Yankee Gong.....55%

Hand—

Hand Bells, Polished, Brass.....
60 & 5 @ 60 & 10 & 5%
White Metal.....60%
Nickel Plated.....50 & 10 @ 50 & 10 & 5%
Sticks.....60 @ 60 & 7 1/2%
Cone's Globe Hand Bells.....33 1/3 @ 35%
Silver Chime.....33 1/3 @ 35%

Miscellaneous—

Farm Bells.....lb. 2 1/4%
Steel Alloy Church and School
sets.....50 & 10 & 5 @ 60 & 5%
American Tube & Stamping Co.
Gongs.....75%
Table Call Bells.....50 @ 50 & 10%

Belt— Leather—

Extra Hvy, Short Lap.....60 @ 60 & 5%
Regular Short Lap.....65 & 10 @ 70%
Standard.....70 & 5 @ 70 & 10%
Light Standard.....70 & 10 @ 75%
Cut Leather Lacing.....60 & 10%
Leather Lacing Slides, per sq. ft.
17 1/2 @ 18 1/2%

Rubber—

Agricultural (Low Grade).....
75 @ 75 & 5%
Common Standard.....70 @ 70 & 10%
Standard.....65 & 70%
Extra.....60 & 5 @ 60 & 10%
High Grade.....50 & 5 @ 50 & 10%

Bench Stops—

See Stops, Bench

Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....50%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;
No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks— Tackle—

Common Wooden.....70 & 10 @ 75 & 5%
Harts St. Tackle Blocks.....50 & 5 @ 50 & 5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50 & 10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50 & 10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....30 & 10 @ 40 & 10%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....\$89.50

Boles—

Carriage, Machine, &c.—
Common Carriage (cut thread):
% & 6 and Smaller.....75%
Larger and longer.....65 & 10 @ 75%
Phila. Eagle \$3.00 list May 21, '99

Holt Ends, list Feb. 11, '95.....70 & 2 1/2%
Machine, % & 4 and smaller.....75 & 2 1/2%
Machine, larger and longer.....70 & 5%

Door and Shutter—

Cast Iron Barrel, Japanned,
Round Brass Knob:
Inch.....3 4 5 6 8
Per doz. \$0.30 .35 .45 .55 .75
Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz.....\$1.15 1.40 2.00
Cast Iron Chain, Flat, Japanned:
Inch.....6 8 10
Per doz.....\$0.95 1.25 1.55
Cast Iron Shutter, Japanned,
Brass Knobs:
Inch.....6 8 10
Per doz.....\$0.80 .90 1.20
Wrt Barrel Jap'd.....80 @ 80 & 10%
Wrt "Bronzed".....50 @ 50 & 10%
Wrt Spring.....70 & 10 @ 70 & 10%
Wrt Shutter.....50 & 5 @ 50 & 10 & 5%
Wrt Square Neck.....75 @ 75 & 10%
Wrt Square.....66 1/2 @ 100 @ 68 1/2 @ 10 & 10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....65 & 10 @ 65 & 10%
Stove.....82 1/2 @ 100 @ 82 1/2 @ 10 & 5%

Tire—

Common.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82 1/2%
Bay State, list Dec. 23, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....82 1/2%
Eclipse, list Dec. 23, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 23, '99.....80%
Norway Phila., list Oct., '84.....80%
Upon Nut Co.:
Tire Bolts.....72 1/2%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch.....1 1/4 1 1/2 1 3/4 2
Per doz.....\$4.80 5.60 6.40 8.00
Inch.....2 1/4 2 1/2 2 3/4 3
Per doz.....\$5.65 6.45 7.25 8.00
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.60; No. 3, \$2.50 each.....25%

Boxes, Mite—

C. E. Jennings & Co.....30%
Langdon.....15 & 10%
Perfection..... $\frac{1}{2}$ doz. \$30.00
Schals.....40%
Stanley R. & L. Co.:
Nos. 240 to 450.....30%
Nos. 50 and 60.....35%

Braces—

Common Ball, American.....\$1.25 @ \$1.50
Barber's.....50 & 10 @ 60 & 10%
Fray's Genuine Spotted.....60%
Fray's No. 70 to 120, \$1 to 123, 297 to 414.....60%
C. E. Jennings & Co.....50 & 5%
Mayhew's Ratchet.....50%
Mayhew's Quick Action Hay Pat.....50%
Millers Falls Drill Braces.....25 & 10%
P. S. & W. Co., Peck's Pat.....60 & 10 @ 65%
Stanley R. & L. Co.:
Stanley.....35%
Victor.....45%

Brackets—

Wrought Steel.....80 & 10 @ 80 & 10 & 5%
Bradley's Wire Shelf:
Full cases.....80 & 10 @ 10%
Broken cases.....80 & 10%
Griffin's Pressed Steel.....80 @ 80 & 10%
Griffin's Folding Brackets.....70 & 10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60 & 10%

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75 & 20%
Western, W. G. Co.....80%
Wire Goods Co.....75 @ 75 & 10%

Buckets, Galvanized—

Per dozen,
Quart.....12 11
Water, Regular.....1.40 1.70 1.90
Water, Heavy.....3.40 3.70 3.80
Fire, Rd. Bottom.....2.30 2.55 2.95
Well.....2.55 2.87 3.15

Bucks, Saw—

Hoover..... $\frac{1}{2}$ gro. \$36.00

Bull Rings—See Rings, Bull

Butts— Brass—

Wrought, list Sept., '96.....30%
Cast Brass, Tiebout's.....60%

Cast Iron—

Fast Joint, Broad.....40 & 10 @ 50%
Fast Joint, Narrow.....40 & 10 @ 50%
Loose Joint.....70 & 10 @ 75%
Loose Pin.....70 & 10 @ 75%
Mayer's Hinges.....70 @ 70 & 5%
Parliament Butts.....70 @ 70 & 5%

Wrought Steel—

Table and Rack Flaps.....75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70 & 10%
Loose Pin, Ball and Steeple Pin.....85%
Japanned Ball Tip Butts.....70 & 10%
Bronzed, Wrt., Nar. and Inside Blind Butts.....55 & 10%

Cages, Bird—

Hendryx, Bn.:
300, 500, 1100 series.....5%
1200 series.....33 1/3%
200, 300, 600 and 900 series.....40 & 10%

hendryx Bronze: 40&10%
100, 800 series 40&10%
hendryx Enamelled 40&10%

Calipers—See *Compasses*.
Calks, Toe and heel—

Blunt, 1 prong... per lb. 44¢
Sharp, 1 prong... per lb. 44¢
Gautier, Blunt... 44¢
Gautier, Sharp... 44¢
Perkins, Blunt... 44¢
Perkins, Sharp... 44¢

Can Openers—
See *Openers, Can*.
Cans, Milk—

Illinois Pattern... 1.35 1.85 2.05 each.
New York Pattern... 1.50 2.20 2.45 each.
Baltimore Pattern... 1.50 2.20 2.45 each.
Dubuque... 1.35 1.60 1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:
5 8 10 gal.
\$18.00 60.00 129.00 gro., net.

Caps, Percussion—
Eley's E. B. 59¢
G. D. 59¢
F. L. 59¢
G. E. 59¢
Musket 59¢

Primers—
Berdan Primers, 32 per M. 20¢
B. L. Caps (Sturtevant Shells) 2¢ per M. 20¢
All other primers per M. \$1.50 @ 1.60

Cartridges—
Blank Cartridges:
32 C. F., \$5.50... 10¢
38 C. F., \$7.00... 10¢
22 cal. Rim, \$1.50... 10¢
32 cal. Rim, \$2.75... 10¢

B. B. Caps, Con. Ball, Segd. \$1.90
B. B. Caps, Round Ball... \$1.49
Central Fire... 25¢
Target and Sporting Rifle... 15¢
Primed Shells and Bullets... 15¢
Rim Fire, Sporting... 50¢
Rim Fire, Military... 15¢

Casters—
Bed 70¢
Plate 60¢
Philadelphia 75¢
Acme, Ball Bearing... 70¢
Boss Anti-Friction... 70¢
Gem (Roller Bearing)... 80¢
Martin's Patent (Phoenix)... 45¢
Standard Ball Bearing... 45¢
Tucker's Patent low list... 45¢
Yale (Double Wheel) low list... 50¢

Cattle Leaders—
See *Leaders, Cattle*.
Chain, Coil—

American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16 3/4
7-10 5-10 4-15 3-15 3-20 3-15
3-10 3-10 2-95 2-95 per 100 lb.
German Coil... 60¢
Halters and Ties—

Halter Chains... 60¢
German Pattern Halter Chains,
list July 21, '97... 60¢
Cow Ties... 60¢

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6 1/2-6 3/4, Strght, with ring \$23.50
6 1/2-6 3/4, Strght, with ring \$24.50
6 1/2-6 3/4, Strght, with ring \$28.00
6 1/2-6 3/4, Strght, with ring \$32.00
NOTE—Add 2c per pair for Hooks.
Twist Traces 2c per pair higher than
Straight Link.

Trace, Wagon and Fancy
Chains... 60¢
Miscellaneous—

Jack Chain, list July 10, '93:
Iron... 60¢
Brass... 60¢
Safety Chain... 75¢
Gal. Pump Chain... 5¢
Covert Mfg. Co.:
Brest... 40¢
Halter... 40¢
Heel... 40¢
Rein... 40¢
Stallion... 40¢

Covert Sad. Works:
Brest... 70¢
Halter... 70¢
Hold Back... 70¢
Rein... 70¢
Oneida Community:
Am. Coil and Halters... 40¢
Am. Cow Ties... 40¢
Eureka Coil and Halter... 40¢
Niagara Coil and Halter... 40¢
Niagara Cow Ties... 40¢
Niagara Wire Dog Chains... 40¢

Wire Goods Co.:
Dog Chain... 70¢
Universal Dbl. Jointed Chain... 50¢
Chalk—(From Jobbers.)

Carpenters' Blue... 30¢
Carpenters' Red... 30¢
Carpenters' White... 25¢
See also Crayons.

Checks, Door—
Bardsley's... 45¢
Columbia... 50¢
Eclipse... 50¢

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools... 55¢
Youth's Chests, with Tools... 40¢
Gentlemen's Chests, with Tools... 30¢
Farmers' Chests, with Tools... 20¢
Machinists' and Pipe Fitters' Chests, Empty... 50¢
Tool Chests... 50¢
C. E. Jennings & Co.'s Machinists' Tool Chests... 33¢

Chisels—
Socket Framing and Firmer

Standard List... 75¢
Buck Bros... 30¢
Charles Buck... 30¢
C. E. Jennings & Co. Socket Firmer No. 10... 60¢
C. E. Jennings & Co. Socket Framing No. 15... 60¢
Ohio Tool Co... 70¢
Swan's... 70¢
L. & I. J. White... 30¢

Tanged—
Tanged Firmers 33 1-3 @ 33 1-3 @ 10%
Buck Bros... 30¢
Charles Buck... 30¢
C. E. Jennings & Co. No. 191, 181... 25¢
L. & I. J. White, Tanged... 25¢

Cold—
Cold Chisels, good quality... 13¢
Cold Chisels, fair quality... 11¢
Cold Chisels, ordinary... 9¢

Chucks—
Beach Pat., each \$8.00... 35¢
Pratt's Positive Drive... 25¢
Empire... 25¢
Blacksmith's... 25¢
Skinner Patent Chuck... 50¢
Independent Lathe Chucks... 50¢
Universal... 50¢
Combination... 50¢
Drill Chucks, New Model... 30¢
Drill Chucks, Standard... 45¢
Drill Chuck, Skinner Pat. 9, 1, 2... 35¢
Drill Chucks, Skinner Pat. 3, 4, 5, 6, 7, 8... 35¢
Drill Chucks, Positive Drive... 30¢
Planer Chucks... 25¢
Standard Tool Co.'s... 40¢
Improved Drill Chuck... 45¢
Union Mfg. Co.:
Combination... 50¢
Czar Drill... 35¢
Combination Geared Scroll... 40¢
Geared Scroll... 40¢
Independent... 50¢
Independent Steel... 40¢
Union Drill... 45¢
Universal... 50¢
Independent Iron P. Plate Jaws... 40¢
Independent Steel P. Plate Jaws... 40¢
Westcott Patent Chucks:
Lathe Chucks... 50¢
Little Giant Auxiliary Drill... 50¢
Little Giant Double Grip Drill... 50¢
Little Giant Drill, Improved... 50¢
Oneida Drill... 50¢
Scroll Combination Lathe... 50¢

Clamps—
Adjustable, Hammers'... 20¢
Cabinet, Sargent's... 50¢
Carriage Makers'... 50¢
Carriage Makers'... 50¢
Besly, Parallel... 33¢
Lineman's, Utica Drop Forge & Tool Co... 40¢
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable... 55¢
Iwan's Champion, Stationary... 45¢

Sidewalk—
Star Socket, All Steel... 40¢
Star Shank, All Steel... 32¢
W. & C. Shank, All Steel... 32¢
7 1/4 in., \$3.00; 8 in., \$3.25.

Cleavers, Butchers'—
Foster Bros... 30¢
New Haven Edge Tool Co.'s... 45¢
Fayette R. Plumb... 33¢
L. & I. J. White... 30¢

Clippers—
Chicago Flexible Shaft Company:
'98 Chicago Horse... 15¢
1902 Chicago Horse... 10¢
20th Century Horse, each... 20¢
Lightning Belt... 15¢
Chicago Belt... 15¢
Stewart's Patent Sheep... 20¢

Finger Nail Clippers—
Smith & Hemenway Co. 1/2 doz. net \$2.00

Clips, Axle—
Eagle, 5-16 and 3/4 in. 75¢
Norway, 5-16 and 3/4 in. 60¢

Cloth and Netting, Wire—
See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks... 70¢

Coffee Mills—
See *Mills, Coffee*.

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list... 40¢
Leather, Walter B. Stevens & Son's list... 40¢

Combs, Curry—
Metal Stamping Co... 40¢

Mane and Tail—
Covert's Saddlery Works... 60¢

Compasses, Dividers, &c.—
Ordinary Goods... 75¢
Bemis & Call Hdw. & Tool Co.:
Dividers... 65¢
Calipers, Double... 65¢
Calipers, Inside or Outside... 65¢
Calipers, Wing... 65¢
Compasses... 50¢

Conductor Pipe, Galva.—
L. C. L. to Dealers:
Territory. Nested, Not nested.
A. Eastern... 75¢
B. Eastern... 75¢
Central... 75¢
Southern... 75¢
S. Western... 75¢

Terms, 60 days; 2% cash 10 days.
Factory shipments generally delivered.
See also Elave Troughs.

Coolers, Water—
Gal, each... 2 3 4 6 8
Labrador... \$1.20 \$1.50 \$1.80 \$2.10 \$2.70
Gal... 3 4 6 8
Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00
Gal... 2 3 4 6 8
Gal. Lined, ea. \$1.55 \$2.00 \$2.25 \$2.90 \$3.90
Gavl. Lined, side handles,
Gal... 2 3 4 6 8
Each... \$1.35 \$2.15 \$2.40 \$3.30 \$4.15

Coopers' Tools—
See *Tools, Coopers'*.

Cord—
Sash—
Braided, Drab... 1b. 35¢
Braided White, Com. lb. 21¢
Cable Laid Italian... 1b. A, 18¢; B, 16¢
Common India... 1b. 10¢
Cotton Sash Cord, Twisted... 11¢
Patent Russian... 11¢
Cable Laid Russian... 11¢
India Hemp, Braided... 11¢
India Hemp, Twisted... 11¢
Patent India, Twisted... 11¢
Anniston Cordage Co.: Braided Cotton,
Old Glory, Nos. 7 to 12... 20¢
Anniston, Nos. 7 to 12... 20¢
Old Colony, Nos. 7 to 12... 20¢
Anniston Drab, Nos. 7 to 12... 20¢
Pearl Braided cotton, No. 6... 10¢
22¢; No. 7, 21¢; No. 8, 12¢
Eddystone Braided, Nos. 7, 8, 9 and
Eddystone Braided Cotton, No. 6... 10¢
Harmony Cable Laid Italian... 25¢
Peerless:
Cable Laid Italian... 16¢
Cable Laid Russian... 14¢
Cable Laid India... 12¢
Braided India... 18¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton... 40¢
Braided, Italian Hemp... 40¢
Braided, Linen... 55¢
Braided, White Cotton or Spot... 55¢
Massachusetts, White... 28¢
Massachusetts, Drab... 32¢
Phoenix, White, Nos. 8 to 12, 24¢;
No. 1, 25¢; No. 6, 25¢.

Wire, Picture—
List Oct., '05:
85¢ 10¢ 10¢ 85¢ 10¢ 10¢ 85¢
Hendryx Standard Wire Picture Cord... 85¢

Cradles—
Grain... 40¢

Crayons—
White Round Crayons, gr. 5 1/2 @ 6¢
Cases, 100 gr., \$4.00, at factory.
D. M. Steward Mfg. Co.:
Jumbo Crayons... gr. 3.50
Metal Workers' Crayons, gr. 2.50
Soapstone Pencils, round, flat
or square... gr. 1.50
Rolling Mill Crayons... gr. 2.50
Railroad Crayons (composition)... gr. 2.00

Crooks, Shepherds'—
Fort Madison, Heavy... 40¢
Fort Madison, Light... 40¢

Crow Bars—See *Bars, Crow*.

Cultivators—
Victor Garden... 50¢

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847... 30¢
Star, Eagle, Rogers & Hamilton
and Anchor... 30¢
Wm. Rogers & Son... 30¢

Cutters—
Glass—
H. H. Mayhew Co... 40¢
Red Devil... 50¢
Smith & Hemenway Co... 50¢
Woodward... 40¢

Meat and Food—
American... 30¢
Each... \$5 \$7 \$10 \$25 \$50 \$60
Enterprise... 25¢
Nos... 5 10 12 22 32
Dixon's... \$2 \$3 \$2.75 \$4.50 \$8
Nos... \$2 \$3 \$2.75 \$4.50 \$8
Ideal... \$14.00 \$17.00 \$19.00 \$30.00
Little Giant... \$20.00 \$25.00 \$30.00 \$40.00
Nos... \$35.00 \$45.00 \$55.00 \$72.00 \$85.00
N. E. Food Choppers... 10¢
New Triumph No. 605... 24¢

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c... 40¢
Kraut Cutters, 24 x 7, 26 x 8, 30
x 9... 55¢
Kraut Cutters, 36 x 12, 40 x 12... 40¢
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife... 30¢
Combined Slaw Cutter and Corn
Grater... 40¢
Tucker & Dorsey Mfg. Co.:
Kraut Cutters... 40¢
Slaw Cutters, 1 Knife... \$18 @ \$20
Slaw Cutters, 2 Knife... \$22 @ \$36

Tobacco—
All Iron, Cheap... doz. \$4.25 @ \$4.50

Enterprise... 25¢
National, 1/2 doz., No. 1, 21¢; No. 2,
\$18... 40¢
Sargent's, 1/2 doz., No. 2... 40¢
Sargent's, Nos. 12 and 21... 60¢

Washer—
Appleton's, 1/2 doz., \$16.00... 50¢

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger, per doz. \$9.00
Iwan's Imp'vd Post Hole Auger... 40¢
Iwan's Vaughan Pattern Post Hole
Augers... 40¢
Iwan's Perfection Post Hole Digger... 40¢
Iwan's Split Handle Post Hole Dig-
gers... 25¢
Kohler's Universal... 15¢
Kohler's Little Giant... 15¢
Kohler's Hercules... 15¢
Kohler's Invincible... 15¢
Kohler's Rival... 15¢
Kohler's Pioneer... 15¢
Never-Break Post Hole Diggers, 7 1/2
doz., \$24.00... 60¢
Samson, 1/2 doz. \$34.00... 25¢

Dividers—See *Compasses*.

Doors, Screen—
Phillips', style E, 3/4 in... 10¢
Phillips', style 077, 3/4 in... 10¢
Phillips', style x-y, 3/4 in... 10¢

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, 1/2
doz., \$18; No. 2, \$15; No. 3, \$12;
No. 4, \$18.

Drawing Knives—
See *Knives, Drawing*.

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers... 35¢
Diamond Wheel Dresser Cutters... 35¢

Drills and Drill Stocks—
Common Blacksmiths' Drill,
each... \$1.50 @ \$1.75
Breast, Millers Falls... 15¢
Breast, P. S. & W... 40¢
Goodell Automatic Drills... 40¢
Johnson's Automatic Drills, Nos. 1,
2 and 3... 16¢
Johnson's Drill Points... 16¢
Millers Falls Automatic Drills... 33¢
Ratchet, Curtis & Curtis... 25¢
Ratchet, Parker's... 40¢
Ratchet, Weston's, P. S. & W... 50¢
Ratchet, Whitney's... 50¢
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00... 33¢

Twist Drills—
Bit Stock... 60¢
Taper and Straight Shank... 60¢

Drivers, Screw—
Screw Driver Bits, per doz. 45¢
Baley's Screw Driver and Driver,
1/2 doz., 2 1/2-in., 3/4-in., 1-in., 1 1/4-in.,
1 1/2-in., 2-in., 2 1/2-in., 3-in., 3 1/2-in.,
4-in., 4 1/2-in., 5-in., 5 1/2-in., 6-in.,
6 1/2-in., 7-in., 7 1/2-in., 8-in., 8 1/2-in.,
9-in., 9 1/2-in., 10-in., 10 1/2-in., 11-in.,
11 1/2-in., 12-in., 12 1/2-in., 13-in., 13 1/2-in.,
14-in., 14 1/2-in., 15-in., 15 1/2-in., 16-in.,
16 1/2-in., 17-in., 17 1/2-in., 18-in., 18 1/2-in.,
19-in., 19 1/2-in., 20-in., 20 1/2-in., 21-in.,
21 1/2-in., 22-in., 22 1/2-in., 23-in., 23 1/2-in.,
24-in., 24 1/2-in., 25-in., 25 1/2-in., 26-in.,
26 1/2-in., 27-in., 27 1/2-in., 28-in., 28 1/2-in.,
29-in., 29 1/2-in., 30-in., 30 1/2-in., 31-in.,
31 1/2-in., 32-in., 32 1/2-in., 33-in., 33 1/2-in.,
34-in., 34 1/2-in., 35-in., 35 1/2-in., 36-in.,
36 1/2-in., 37-in., 37 1/2-in., 38-in., 38 1/2-in.,
39-in., 39 1/2-in., 40-in., 40 1/2-in., 41-in.,
41 1/2-in., 42-in., 42 1/2-in., 43-in., 43 1/2-in.,
44-in., 44 1/2-in., 45-in., 45 1/2-in., 46-in.,
46 1/2-in., 47-in., 47 1/2-in., 48-in., 48 1/2-in.,
49-in., 49 1/2-in., 50-in., 50 1/2-in., 51-in.,
51 1/2-in., 52-in., 52 1/2-in., 53-in., 53 1/2-in.,
54-in., 54 1/2-in., 55-in., 55 1/2-in., 56-in.,
56 1/2-in., 57-in., 57 1/2-in., 58-in., 58 1/2-in.,
59-in., 59 1/2-in., 60-in., 60 1/2-in., 61-in.,
61 1/2-in., 62-in., 62 1/2-in., 63-in., 63 1/2-in.,
64-in., 64 1/2-in., 65-in., 65 1/2-in., 66-in.,
66 1/2-in., 67-in., 67 1/2-in., 68-in., 68 1/2-in.,
69-in., 69 1/2-in., 70-in., 70 1/2-in., 71-in.,
71 1/2-in., 72-in., 72 1/2-in., 73-in., 73 1/2-in.,
74-in., 74 1/2-in., 75-in., 75 1/2-in., 76-in.,
76 1/2-in., 77-in., 77 1/2-in., 78-in., 78 1/2-in.,
79-in., 79 1/2-in., 80-in., 80 1/2-in., 81-in.,
81 1/2-in., 82-in., 82 1/2-in., 83-in., 83 1/2-in.,
84-in., 84 1/2-in., 85-in., 85 1/2-in., 86-in.,
86 1/2-in., 87-in., 87 1/2-in., 88-in., 88 1/2-in.,
89-in., 89 1/2-in., 90-in., 90 1/2-in., 91-in.,
91 1/2-in., 92-in., 92 1/2-in., 93-in., 93 1/2-in.,
94-in., 94 1/2-in., 95-in., 95 1/2-in., 96-in.,
96 1/2-in., 97-in., 97 1/2-in., 98-in., 98 1/2-in.,
99-in., 99 1/2-in., 100-in., 100 1/2-in., 101-in.,
101 1/2-in., 102-in., 102 1/2-in., 103-in., 103 1/2-in.,
104-in., 104 1/2-in., 105-in., 105 1/2-in., 106-in.,
106 1/2-in., 107-in., 107 1/2-in., 108-in., 108 1/2-in.,
109-in., 109 1/2-in., 110-in., 110 1/2-in., 111-in.,
111 1/2-in., 112-in., 112 1/2-in., 113-in., 113 1/2-in.,
114-in., 114 1/2-in., 115-in., 115 1/2-in., 116-in.,
116 1/2-in., 117-in., 117 1/2-in., 118-in., 118 1/2-in.,
119-in., 119 1/2-in., 120-in., 120 1/2-in., 121-in.,
121 1/2-in., 122-in., 122 1/2-in., 123-in., 123 1/2-in.,
124-in., 124 1/2-in., 125-in., 125 1/2-in., 126-in.,
126 1/2-in., 127-in., 127 1/2-in., 128-in., 128 1/2-in.,
129-in., 129 1/2-in., 130-in., 130 1/2-in., 131-in.,
131 1/2-in., 132-in., 132 1/2-in., 133-in., 133 1/2-in.,
134-in., 134 1/2-in., 135-in., 135 1/2-in., 136-in.,
136 1/2-in., 137-in., 137 1/2-in., 138-in., 138 1/2-in.,
139-in., 139 1/2-in., 140-in., 140 1/2-in., 141-in.,
141 1/2-in., 142-in., 142 1/2-in., 143-in., 143 1/2-in.,
144-in., 144 1/2-in., 145-in., 145 1/2-in., 146-in.,
146 1/2-in., 147-in., 147 1/2-in., 148-in., 148 1/2-in.,
149-in., 149 1/2-in., 150-in., 150 1/2-in., 151-in.,
151 1/2-in., 152-in., 152 1/2-in., 153-in., 153 1/2-in.,
154-in., 154 1/2-in., 155-in., 155 1/2-in., 156-in.,
156 1/2-in., 157-in., 157 1/2-in., 158-in., 158 1/2-in.,
159-in., 159 1/2-in., 160-in., 160 1/2-in., 161-in.,
161 1/2-in., 162-in., 162 1/2-in., 163-in., 163 1/2-in.,
164-in., 164 1/2-in., 165-in., 165 1/2-in., 166-in.,
166 1/2-in., 167-in., 167 1/2-in., 168-in., 168 1/2-in.,
169-in., 169 1/2-in., 170-in., 170 1/2-in., 171-in.,
171 1/2-in., 172-in., 172 1/2-in., 173-in., 173 1/2-in.,
174-in., 174 1/2-in., 175-in., 175 1/2-in., 176-in.,
176 1/2-in., 177-in., 177 1/2-in., 178-in., 178 1/2-in.,
179-in., 179 1/2-in., 180-in., 180 1/2-in., 181-in.,
181 1/2-in., 182-in., 182 1/2-in., 183-in., 183 1/2-in.,
184-in., 184 1/2-in., 185-in., 185 1/2-in., 186-in.,
186 1/2-in., 187-in., 187 1/2-in., 188-in., 188 1/2-in.,
189-in., 189 1/2-in., 190-in., 190 1/2-in., 191-in.,
191 1/2-in., 192-in., 192 1/2-in., 193-in., 193 1/2-in.,
194-in., 194 1/2-in., 195-in., 195 1/2-in., 196-in.,
196 1/2-in., 197-in., 197 1/2-in., 198-in., 198 1/2-in.,
199-in., 199 1/2-in., 200-in., 200 1/2-in., 201-in.,
201 1/2-in., 202-in., 202 1/2-in., 203-in., 203 1/2-in.,
204-in., 204 1/2-in., 205-in., 205 1/2-in., 206-in.,
206 1/2-in., 207-in., 207 1/2-in., 208-in., 208 1/2-in.,
209-in., 209 1/2-in., 210-in., 210 1/2-in., 211-in.,
211 1/2-in., 212-in., 212 1/2-in., 213-in., 213 1/2-in.,
214-in., 214 1/2-in., 215-in., 215 1/2-in., 216-in.,
216 1/2-in., 217-in., 217 1/2-in., 218-in., 218 1/2-in.,
219-in., 219 1/2-in., 220-in., 220 1/2-in., 221-in.,
221 1/2-in., 222-in., 222 1/2-in., 223-in., 223 1/2-in.,
224-in., 224 1/2-in., 225-in., 225 1/2-in., 226-in.,
226 1/2-in., 227-in., 227 1/2-in., 228-in., 228 1/2-in.,
229-in., 229 1/2-in., 230-in., 230 1/2-in., 231-in.,
231 1/2-in., 232-in., 232 1/2-in., 233-in., 233 1/2-in.,
234-in., 234 1/2-in., 235-in., 235 1/2-in., 236-in.,
236 1/2-in., 237-in., 237 1/2-in., 238-in., 238 1/2-in.,
239-in., 239 1/2-in., 240-in., 240 1/2-in., 241-in.,
241 1/2-in., 242-in., 242 1/2-in., 243-in., 243

Faucets—

Cork Lined.....50¢@50¢10%
Metallic Key, Leather Lined.....
60¢10¢@70%
Red Cedar.....40¢10¢@50%
Petroleum.....70¢10¢@75%
B. & L. B. Co.:
Star Key.....60¢10%
West Lock.....50¢10%
John Sommer's Peerless Tin Key.....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.....50%
John Sommer's Duplex Tin Key.....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined.....50%
John Sommer's Reliable Cork Lined.....50%
John Sommer's Chicago Cork Lined.....60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection, Cedar.....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, 3/4 and 1/2 inch.....25%
Self Measuring.....40%
Enterprise, 3/4 doz. \$36.00.....40%
Lane's, 3/4 doz. \$36.00.....40%
National Measuring, 3/4 doz. \$36.00.....40%

Felloe Plates—
See Plates, Felloe.
Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70¢10¢@75¢5%
Standard Brands.....75¢10¢@75¢10%
Lower Grade.....75¢10¢@80¢10%
Imported—
Stubs' Tapers, Stubs' List, July 24, '97.....33 1-3¢@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....\$4.00
Special, No. 104.....\$4.00
Fusible Links.....\$0.25
Expansion Bolts.....50¢10%
Grindstone—

Net Prices:
Inch.....15 17 19 21 23
Per doz.\$2.15 2.85 3.25 3.75 4.50
P. S. & W. Co.....30¢10¢@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger.....70%
Stowell's Grindstone Fixtures, Extra Heavy.....50¢10¢@10%
Stowell's Grindstone Fixtures, Light.....60¢10%
Fodder Squeezers—
See Compressors.

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potatoes.....60¢10%
Victor, Hay.....60¢15¢@2%
Victor, Manure.....60%
Victor, Header.....60%
Champion, Hay.....60%
Champion, Header.....60%
Champion, Manure.....60¢15¢@2%
Columbia, Hay.....60%
Columbia, Manure.....70%
Columbia, Spading.....70¢12%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60¢10%
Acme Hay.....60%
Acme Manure, 4 line.....60¢10%
Dakota Header.....60%
Jackson Steel Barley.....60%
Kansas Header.....60%
W. & C. Favorite Wood Barley.....40%
Plated—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz. 75¢@80¢
Red, S'g't Bar, per doz. \$1.00¢1.25
Red, Dbl. Brace, per doz. \$1.40¢1.50
Freezers, Ice Cream—
Qt.1 2 3 4 6
Each.....\$1.30 \$1.60 \$1.90 \$2.20 \$2.50
Fruit and Jelly Presses—
See Presses, Fruit and Jelly.
Fry Pans—See Pans, Fry.
Fuse—Per 1000 Feet.

Hemp.....\$2.75
Cotton.....3.20
Waterproof Sgl. Taped.....3.65
Waterproof Dbl. Taped.....4.40
Waterproof Tpl. Taped.....5.15
Gates, Molasses and Oil—
Stebbins' Pattern. 80¢10¢@80¢10¢5%
Gauges—
Marking, Mortise, &c.....50¢10¢5%
Chapin-Stephens Co.:
Marking, Mortise, &c. 50¢10¢5%
Scholl's Patent.....50¢10¢5%
Door Hangers.....50¢10¢5%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....50%
Marking and Mortise.....50%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P. S. & W. Co.....30¢10%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, \$2.00; 2, \$2.30
Spike, Metal, No. 1, \$4.00; 2, \$4.30
Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60
Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60

Glass, American Window—
See Trade Report.

Glasses, Level—
Chapin-Stephens Co.....60¢10¢@10%
Glue, Liquid Fish—
Bottles or Cans, with Brush.....25¢50%
Cans (1/2 pts., pts., qts., 1/2 gal., gal.).....25¢48%
International Glue Co. (Martin's).....40¢10%

Grease, Axle—
Common Grade....gro. \$1.50¢3.50
Dixon's Everlasting, 10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, 3/4 doz. 1 lb., \$1.20; 2 lb., \$2.00
Grips, Nipple—
Perfect Nipple Grips.....40¢10¢2%
Griddles, Soapstone—
Pike Mfg. Co.....33¢10¢@33¢10%

Grindstones—
Bicycle Emery Grinder.....\$4.50
Bicycle Grindstones, each.....\$2.50¢3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, 3/4 doz.....\$2.00 1/2
Pike Mower and Tool Grinder, each.....\$4.00 1/2
Velox Ball Bearing Mounted, Angle Iron Frames, each.....\$3.25
Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50¢5%
Sisal Rope.....35¢5%
Cotton Rope.....45¢2%
Hemp Rope.....45¢2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters.....70%
Sisal Rope Halters.....60¢20%
Jute, Manila and Cotton Rope Ties.....70%
Sisal Rope Ties.....60¢10%

Hammers—
Handled Hammers—
Heller's Machinists'.....40¢10¢@40¢10%
Heller's Farriers.....40¢10¢@40¢10%
Magnetic Tack, Nos. 1, 2, 3, 25¢
\$1.50, \$1.75.....10¢10¢5%
Peck, Stow & Wilcox.....10¢10¢5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33¢10¢@33¢10%
Engineers' and R. S. Hand.....50¢10¢@50¢10%
Machinists' Hammers.....50¢10¢@50¢10%
Riveting and Timbers.....40%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb. 50¢
3 to 5 lb., per lb. 40¢
Over 5 lb., per lb. 30¢
Wilkinson's Smiths'.....1b. 9¢10¢
Handles—
Agricultural Tool Handles
Axe, Pick, &c.....60¢5¢@60¢10¢5%
Hoe, Rake, &c.....45¢50¢5%
Fork, Shovel, Spade, &c.:
Long Handles.....45¢50¢5%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins'.....40¢5%
Champion.....45¢45¢10%
Dixson's.....50%
Mechanics' Tool Handles—
Auger, assorted....gro. \$2.50¢2.85
Brad Axl.gro. \$1.65¢1.85
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....\$2.40¢2.65
Hickory Tanged Firmer, gro. assorted.....\$2.15¢2.40
Apple Socket Firmer, gro. assorted.....\$1.75¢1.95
Hickory Socket Firmer, gro. assorted.....\$1.45¢1.60
Hickory Socket Framing, gro. assorted.....\$1.60¢1.75
File, assorted.....gro. \$1.30¢1.40
Hammer, Hatchet, &c.....60¢10¢@60¢10%
Hand Saw, Varnished, doz. 80¢65¢; Not Varnished.....65¢75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted. 75¢
Fore, doz. 45¢; Fore, Bolted. 90¢
Chapin-Stephens Co.:
Carving Tool.....40¢40¢10%
Chisel.....65¢65¢10%
File and Awl.....65¢65¢10%
Saw and Plane.....40¢40¢10%
Screw Driver.....40¢40¢10%
Millers Falls Adj. and Hatchet Auger Handles.....15¢10%
Nicholson Simplicity File Handle.....30¢
30¢, \$0.85¢1.50

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Barn Door, New England Pattern, Check Back, Regular:
Inch.....3 4 5 6 8
Single Doz.....\$1.30 1.85 2.50 3.00
Allith Mfg. Co.:
Reliable, No. 1.....per doz. \$8.00
Reliable, No. 2.....per doz. \$9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....50%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60¢10¢5%
Roller Bearing.....75¢5%
Griffin Mfg. Co.:
Solid Axle, No. 10, \$12.00.....70%
Roller Bearing, No. 11, \$15.00.....70%
Roller Bearing, Ex. Hy., No. 22, \$18.00.....70%
Hinged Hangers, \$16.00.....60¢10%
Lane Bros. Co.:
Parlor Ball Bearing.....\$4.00
Parlor, Standard.....\$3.15
Parlor, No. 105.....\$2.85
Parlor, New Model.....\$2.80
Parlor, New Champion.....\$2.25
Barn Door, Standard, 60¢10¢5%
Hinged.....\$2.40
Covered.....60¢10%
Special.....70¢5%
Lawrence Bros.:
Advance.....60¢10%
Cleveland.....70¢5%
Clipper, No. 75.....60%
Crown.....60¢10%
Ezzy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25.....60¢5%
Hummer.....70¢5%
Gibb.....70¢5%
New York.....60¢10%
Peerless.....70¢5%
Sterling.....60¢10%
McKinney Mfg. Co.:
No. 1, Special.....60¢10%
No. 2, Standard, \$18.....60¢10%
Hinged Hangers, \$16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3, \$2.15
Roller B'g St'l Track No. 10, \$2.40
Roller B'g St'l Track No. 12, \$2.30
Roller B'g St'l Track No. 13, \$2.40
Roller B'g St'l Track No. 14, \$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trol-ley Track No. 16.....50%
Seal, Steel Track No. 8.....\$2.40
Auto Adj. Track No. 22, 40¢10%
Trolley B. D. No. 17.....\$1.40
Trolley B. D. No. 120.....\$2.35
Trolley F. D. No. 121.....\$2.45
Trolley F. D. No. 130.....\$2.60
Safety Underwriters F. D. No. 101.....\$2.25
Tandem No. 44.....70¢5%
Trolley F. D. No. 151.....\$3.60
Palace Adjustable Track No. 132.....40¢10%
Royal, Adjustable Track No. 122.....40¢10%
Ives' Wood Track No. 1.....\$2.15
Trolley B. D. No. 20.....\$1.35
Trolley B. D. No. 24.....\$1.45
Trolley B. D. No. 27.....\$1.50
Trolley B. D. No. 28.....\$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70¢5%
Antifricion No. 42.....60¢10%
Hinged Tandem No. 45.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing.....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50¢10¢5%
Atlas.....60%
Bagger.....60%
Climax Anti-Friction.....50¢10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Intrastate.....60¢10%
Lundy Farm Door.....50%
Magic.....60%
Matchless.....60¢10%
Nansen.....70¢5%
Parlor Door.....50¢10%
Rex Hinge.....50%
Street Car Door.....50%
Steel, Nos. 300, 401, 500.....50¢10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door.....50%
Zenith for Wood Track.....50¢10%
A. S. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50¢10%
Eagle.....60%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Woooster.....65%
Western Pattern.....70%
Taylor & Boggs F'y Co.'s Kid-der's Roller Bearing.....50¢15¢10¢5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60¢10%
C. J. Roller Bearing.....60¢10%
Cycle Ball Bearing.....40%
Dwarf Ball Bearing.....40%
Ezzy Wood Track.....60¢10%
L. T. Roller Bearing.....60¢10%
New Era Roller Bearing.....50¢10%
O. K. Roller Bearing.....60¢10%
Prindle Wood Track.....60%
Richardson Wood Track.....60%
Richards' Steel Track.....50¢10%
Spencer Roller Bearing.....60%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing.....40%
Velox.....50%
Wilcox Auditorium Ball B'g.....20%
Wilcox Barn Trolley No. 122.....40%
Wilcox Elev. Door, Nos. 112 and 122.....50%
Wilcox Elev. Door No. 132.....40%
Wilcox Fire Trolley, Roller Bearing.....60%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century.....50¢10¢10%
Wilcox O. K. Steel Track.....50%
Wilcox O. K. Trolley.....40%
Wilcox Trolley Ball Bearing.....40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Hangers— Garment—

Pullman Trouser, No. 1.....\$9.00
Pullman Trouser, No. 4.....\$24.00
Victor Folding.....\$9.60
Western, W. G. Co.....70¢10%

Gate—

Myers' Patent Gate Hangers, 3/4 doz. net.....\$4.50
Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, 3/4 doz. 50%

Hatchets—

Regular list, first quality 40¢7½%
Second quality \$1.00 per doz. less than first quality.
Heaters, Carriage—
Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50.....15%
Clark Coal, 3/4 doz. \$0.75.....10%

Hinges—

Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)
No.1 1 1/2 3 5
Doz. pair.....\$0.75 1.35 2.70
Mortise Shutter: (L. & P. O. S., Diale, &c.)
No.1 1 1/2 3 5
Doz. pair.....\$0.70 .65 .60 .55
Mortise Reversible Shutter (Buffalo, &c.):
No.1 1 1/2 3 5
Doz. pair.....\$0.70 .65 .60 .55
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....10%
Parker's Gravity.....70%
Reading's Gravity.....70%
Sargent's, Nos. 1, 3, 5, 11 and 13-75%
Stanley's Steel Gravity Blind Hinges, 3/4 doz. sets, without screws, \$0.90; with screws, \$1.20.
Wrightsville Hardware Co.:
O. S. Lull & Porter.....75¢10¢5%
Acme, Lull & Porter.....75¢10%
Queen City Reversible.....75¢10%
Shepard's Noiseless, Nos. 60, 65, 55.....75¢10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75¢10%
1868, Old Pat'n, Nos. 1, 3 & 5.....75¢10%
Tip Pat'n, Nos. 1, 3 & 5.....75¢10%
Buffalo, Gravity Locking, Nos. 1, 3 & 5.....75¢10%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75-75%
Steamboat Gravity Locking, No. 10-75%
Pioneer, Nos. 101, 45 & 6.....75%
Empire, Nos. 101 & 102.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:
No.1 2 3
Hinges with Latches.....\$2.00 2.70 5.00
Hinges only.....1.40 2.05 3.80
Latches only......70 .70 .35
New England:
With Latch.....doz. \$2.00
Without Latch.....doz. \$1.60
Reversible Self-Closing:
With Latch.....doz. \$1.75
Without Latch.....doz. \$1.35
Western:
With Latch.....doz. \$1.75
Without Latch.....doz. \$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets, Nos. 2, 3
Hinges with Latches.....\$2.00 2.70 5.00
Hinges only.....1.40 2.05 3.80
Latches only......70 .70 1.35
Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%
Spring Hinges—
Holdback Cast Iron.....gro. \$9.00¢\$9.50
Non-Holdback, Cast Iron.....gro. \$8.00¢\$8.50

J. Bardsley:
Bardsley's Non-Checking Mor-tise Floor Hinges.....45%
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges.....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House.....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....30%
Columbia, No. 15.....30%
Columbia, Adjustable.....\$12.00
Gem, new Hat.....30%
Clover Leaf.....30%
Oxford, new Hat.....30%
Lawson Mfg. Co. Matchless.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....\$9.00
Chief Ball B'g Floor Hinge.....50%
Ohio Detachable Screen Door Hinge.....\$12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable.....\$2.00
Ideal, No. 4.....\$2.00
New Idea No. 1.....\$9.00
New Idea, Double Acting.....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.....\$9.00

Extra 50% often given.

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges— Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges.....	70%
Heavy Strap Hinges.....	75%
Light T Hinges.....	65%
Heavy T Hinges.....	60%
Extra Heavy T Hinges.....	70%
Hinge Hasps.....	50%
Cor. Heavy Strap.....	75%
Cor. Ex. Heavy T.....	70%
Screw Hook 6 to 12 in.....	1b. 3 1/2¢
and Strap 1 1/2 to 20 in.....	1b. 3 1/2¢
Screw Hook and Eye.....	1b. 3¢
3/4 to 1 inch.....	1b. 6¢
1/2 inch.....	1b. 7¢
3/4 inch.....	1b. 9¢

Extra
10 to 100%

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.....35%

Hods— Coal—

Inch.....	15	16	17	18
Galv. Open.....	\$2.50	2.75	3.00	3.25
Jap. Open.....	\$1.90	2.10	2.25	2.55
Galv. Funnel.....	\$3.00	3.30	3.60	3.90
Jap. Funnel.....	\$2.45	2.65	2.85	3.30

Masons, Etc.—

Cleveland Wire Spring Co.: Steel Mortar.....	each	\$1.45
Steel Brick.....	each	\$1.15

Hoes— Eye—

Scovill and Oval Pattern.....

Grub, list Feb. 23, 1899.....

D. & H. Scovill.....

Handled—

NOTE.—Manufacturers are
selling from the list of September
1, 1904, but many jobbers are still
using list of August 1, 1899, or
selling at net prices.

Fl. Madison Cotton Hoe.....70% to 100%

Fl. Madison Crescent Cultivator Hoe.....70% to 100%

Fl. Madison Mattock Hoes.....70% to 100%

Regular Weight.....doz. 60%

Junior Size.....doz. \$4.00

Fl. Madison Sprouting Hoe.....doz. 50%

Fl. Madison Dixie Tobacco Hoe.....75% to 100%

Kretzinger's Cut Easy.....70% to 100%

Warren Hoe.....75% to 100%

W. & C. L. Vanhook.....75% to 100%

B. H. 6 in. Cultivator Hoe.....\$3.15

B. B. 6 in. in.....\$3.35

Acme Wedding.....doz. net, \$4.85

W. & C. L. Vanhook Shovel Hoe.....doz. \$4.85

Hoisting Apparatus—

See Machines, Hoisting.

Holders— Bit—

Angular, 1/2 doz. \$24.00.....45% to 100%

Door—

Empire.....60%

Bardley's.....45%

File and Tool—

Nicholson File Holders and File
Handles.....35% to 40%

Fruit Jar—

Triumph Fruit Jar Holder, 1/2 gross,
\$10.80; 1/2 doz. \$1.25

Hooks—Cast Iron—

Bird Cage, Reading.....40%

Ceiling, Sargent's List.....50% to 100%

Clothes Line, Reading List.....40%

Clothes Line, Sargent's List.....50% to 100%

Coat and Hat, Sargent's List.....50% to 100%

Clothes Line, Stowell's.....70%

Coat and Hat, Reading.....45% to 70%

Coat and Hat, Stowell's.....70%

Coat and Hat, Wrightsville.....60%

Harness, Reading List.....40%

Harness, Stowell's.....60%

School House, Stowell's.....70%

Wire—

Belt.....80% to 100%

Wire C. & H. Hooks.....75% to 100%

Atlas, Coat and Hat.....75%

Single Cases.....75% to 100%

10 Case Lots.....75% to 100%

Columbian Hdw. Co., Gem.....60% to 100%

Parker Wire Goods Co., King.....75% to 100%

Van Wagner, Coat and Hat.....70%

Western W. G. Co., Molding.....75%

Wire Goods Co.:
Acme.....60% to 100%

Chief.....70%

Crown.....70% to 100%

Czar.....65%

Czar Harness.....50% to 100%

Wrought Iron—

Box, 6 in., per doz., \$1.00; 8 in.,
\$1.25; 10 in., \$2.50.

Cotton.....doz. \$1.05 to \$1.25

Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops, Bench.

Bush, Light, doz. \$1.75; Medium,
\$5.35; Heavy, \$6.25

Grass, best, all sizes, per doz. \$1.50

Grass, common grades, all sizes,
per doz., \$1.30

Whistle.....lb. 5¢ to 6¢

Horse Nails—

See Nails, Horse.

Horseshoes—

See Shoes, Horse.

Hose, Rubber—

Garden Hose, 1/2-inch:

Competition.....ft. 5 @ 6¢

3-ply Standard.....ft. 8 @ 9¢

4-ply Standard.....ft. 10 @ 11¢

3-ply extra.....ft. 11 @ 13¢

4-ply extra.....ft. 14 @ 16¢

Cotton Garden, 1/2-in., coupled:

Low Grade.....ft. 8 @ 9¢

Fair Quality.....ft. 10 @ 11¢

Irons— Sad—

From 4 to 10.....lb. 3 1/2¢ to 3 3/4¢

B. B. Sad Irons.....lb. 3 1/2¢ to 3 3/4¢

Chinese Laundry.....lb. 3 1/2¢ to 3 3/4¢

Chinese Sad.....lb. 4 @ 4 1/2¢

Mrs. Potts', cents per set:

Nos.....50 55 60 65

Jap'd Tops.....62 59 73 69

Tin'd Tops.....65 62 75 72

New England Pressing, lb. 3 1/2¢ to 4¢

Pinking—

Pinking Irons.....doz. 50 @ 60¢

Soldering—

Soldering Coppers, 2 1/2 & 3.20 @ 2 1/2¢

1 1/2 & 2.....25 @ 35¢

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30¢ to 5¢

Steel.....45¢ to 2¢

Covert's Saddlery Works:
Daisy.....60¢ to 10¢

Victor.....50¢

Lockport.....50¢

Lane's Steel.....30¢ to 10¢

Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....20¢ to 25¢

Enamelled and Cast Iron—See Ware,
Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c.....30%

Smith & Hemenway Co.....40% to 100%

Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, 1/2 doz. \$2.65;

Dent, \$2.75; Adj. Serrated, \$2.20;

Serrated, \$2.10; Yankee No. 1, \$1.80;

Yankee No. 2, \$1.15.

Drawing—

Standard List.....75%

C. E. Jennings & Co., Nos. 45, 46, 00

Jennings & Griffin, Nos. 41, 42.....60%

Ohio Tool Co.'s.....40% to 100%

Swan's.....40% to 100%

Watrous.....16%

L. & I. J. White.....20% to 25%

Hay and Straw—

Serrated Edge, per doz. \$5.25 to \$5.50

Ivan's Sickle Edge.....doz. \$3.50

Ivan's Serrated.....doz. \$10.00

Mincing—

Buffalo.....1/2 gro. \$13.00

Miscellaneous—

Farriers'.....doz. \$3.00 to \$3.25

Wostenholme's.....doz. \$3.00 to \$3.25

Knobs—

Base, 2 1/2-inch, Birch, or Maple,

Rubber tip.....gro. \$1.15 to \$1.20

Carriage, Jap., all sizes.....

gro. 40¢ to 45¢

Door, Mineral.....doz. 65¢ to 70¢

Door, Por. Jap'd.....doz. 70¢ to 75¢

Door, Por. Nickel.....doz. \$2.05 to \$2.15

Bardley's Wood Door, Shutters, &c. 15

Picture, Sargent's.....60% to 100%

Lacing, Leather—

See Belting, Leather—

Ladders, Store, &c.—

Lane's Store.....25%

Myers' Noiseless Store Ladders.....50%

Richards' Mfg. Co.:
Improved Noiseless, No. 112.....40%

Climax Shelf, No. 113.....40%

Trolley, No. 109.....40%

Ladies, Melting—

L. & G. Mfg. Co. (low list).....25%

P. S. & W.....60%

Reading.....60%

Sargent's.....50% to 100%

Lanterns—Tubular—

Regular Tubular, No. 0.....doz. \$4.25 to \$4.85

Lift Tubular, No. 0.....doz. \$4.50 to \$5.15

Hinge Tubular, No. 0.....doz. \$4.50 to \$5.15

Other Styles.....40% to 100%

Bull's Eye Police—

No. 1, 2 1/2-inch.....\$2.50 to \$2.75

No. 2, 3-inch.....\$2.75 to \$3.00

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%

Stowell's Badger, Cast Iron.....50%

Latches—Thumb—

Roggin's Latches, with screw.....doz. 35¢ to 40¢

Door—

Richards' Bull Dog, Heavy No. 125, 40%

Richards' Trump, No. 127.....50%

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢

Covert Mfg. Co.....35%

Lifters, Transom—

R. & E.....35% to 40%

Lines—

Wire Clothes, Nos. 18 29 30

100 feet.....\$2.20 2.00 1.65

75 feet.....\$1.80 1.70 1.30

Sansom Cordage Works:
Solid Braided Chalk, Nos. 0 to 3.40%

Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.
3, \$7.50

Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3 1/2, \$1.50; No. 4,
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;

Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
No. 4 1/2, \$4.50

Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Drab Cotton,
\$8.50

Clothes Lines, White Cotton: 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;

100 ft., \$5.25

Anniston Waterproof Clothes, 50 ft.,
1/2 gro. \$24.00; Gilt Edge, \$22.00; Air
Line, \$22.00; Acme, \$17.00; Alabama,
\$15.00; Empire, \$14.00; Advance,
\$13.50; Oriole, \$30.00; Albemarle,
\$12.50; Eclipse, \$12.50; Chicago,
\$11.00; Standard, \$10.00; Columbia,
\$8.50; Allston, \$12.50; Calhoun, \$11.00.

Locks— Cabinet—

Cabinet Locks.....33 1/2% to 37 1/2%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made
on these goods.

Reading Hardware Co.....40%

R. & E. Mfg. Co.....40% to 100%

Sargent & Co.....40% to 100%

Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron.....75% to 100%

R. & E. Mfg. Co. Wrought Steel and
Brass.....75% to 100%

Sash, &c.—

Ires' Patent:
Bronze and Brass.....62 1/2%

Crescent.....50% to 100%

Window Ventilating.....60%

Robison Patent Ventilating Sash
Lock.....40%

Wrought Bronze and Brass.....55%

Wrought Steel.....55%

Pullman Patent Ventilating Lock.....60%

Reading.....60%

Machines—Boring—

Com. Up'r, without Augers.....\$2.00

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.....	\$32.50@35.50
2 ply, roll 108 sq. ft.....	55@60
3 ply, roll 108 sq. ft.....	78@85
Slater's Felt (roll 500 sq. ft.).....	75
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....	\$2.75

Sand and Emery—

Flint Paper and Cloth.....	60@100
Garnet Paper and Cloth.....	25
Emery Paper and Cloth.....	50@100

Parers— Apple—

Advance.....	doz. \$4.00
Baldwin.....	doz. \$4.00
Bonanza Improved.....	each \$6.50
Daisy.....	doz. \$4.00
Dandy.....	each \$7.50
Eurea Improved.....	each \$20.00
Family Bay State.....	doz. \$15.00
Improved Bay State.....	doz. \$20.00
Little Star.....	doz. \$5.00
New Lightning.....	doz. \$7.00
Reading 72.....	doz. \$3.25
Reading 78.....	doz. \$6.25
Rocking Table.....	doz. \$6.25
Turn Table.....	doz. \$6.00
White Mountain.....	doz. \$5.00

Potato—

Saratoga.....	doz. \$7.00
White Mountain.....	doz. \$6.00

Picks and Mattocks—

Last Feb. 23, 1899.....	70@75
Cronk's Handled Garden Mattocks.....	doz. \$6.40

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass.....	60@60.10
Iron, list Nov. 11, '85.....	60@60.10

Pipe, Cast Iron Soil—

Carload lots.

Standard, 2-6 in.....	60
Extra Heavy, 2-6 in.....	70
Fittings.....	75

Pipe, Merchant—

Carload lots.

	Steel.	Iron.
1/4 & 1/2 in.....	67 1/2	57 1/2
3/4 & 1 in.....	71 1/2	59 1/2
1 1/4 & 1 1/2 in.....	75 1/2	63 1/2
2 & 2 1/2 in.....	79 1/2	67 1/2
3 & 3 1/2 in.....	83 1/2	71 1/2
4 & 4 1/2 in.....	87 1/2	75 1/2
5 & 5 1/2 in.....	91 1/2	79 1/2
6 & 6 1/2 in.....	95 1/2	83 1/2
7 & 7 1/2 in.....	99 1/2	87 1/2
8 & 8 1/2 in.....	103 1/2	91 1/2
9 & 9 1/2 in.....	107 1/2	95 1/2
10 & 10 1/2 in.....	111 1/2	99 1/2
12 & 12 1/2 in.....	115 1/2	103 1/2

Pipe, Sewer—

Carload lots.

Standard Pipe and Fittings, 2 to 24 in.....	
New England.....	71
New York and New Jersey.....	74
Maryland, Delaware, E. Pa.....	78
West. Pa. and West Va.....	80
Virginia.....	76
Ohio, Michigan and Ky.....	80
Indiana.....	80

NOTE.—Carload lots are generally de-

scribed.

Pipe, Stove—

Edwards' Nested Stove Pipe:	
5 in., per 100 joints.....	7.00
6 in., per 100 joints.....	8.50
7 in., per 100 joints.....	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....	40@100
Bench, second qual.....	50@100
Molding.....	35@40
Bailey's (Stanley R. & L. Co.).....	40
Chapin-Stephens Co.:.....	
Bench, First Quality.....	40@100
Bench, Second Quality.....	50@100
Molding.....	35@40
Toy and German.....	40@100
Chapin's.....	60
Ohio Tool Co.:.....	
Bench, First Quality.....	40@100
Bench, Second Quality.....	50@100
Molding.....	35@40
Adjustable Wood Bottom.....	60
Union.....	60

Iron Planes—

Bailey's (Stanley R. & L. Co.).....	40
Chapin's Iron Planes.....	50@100
Miscellaneous Planes (Stanley R. & L. Co.).....	35
Ohio Tool Co.'s Iron Planes.....	60
Sargent's.....	60@100
Union.....	60

Plane Iron—

Wood Bench Plane Irons.....	25@100
Buck Bros.....	30
Chapin-Stephens Co.....	30@30.10
Ohio Tool Co.....	30
Stanley R. & L. Co.....	35
Union.....	50
L. & J. White.....	20@25

Planters, Corn, Hand—

Kohler's Eclipse.....	doz. \$8.50
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Plates—

Felco.....	lb. 3/4 @ 1/4
Self-Sealing Pie Plates (S. S. & Co.).....	doz. \$2.00

Pliers and Nippers—

Button Pliers.....	75@100
Gas Burner, per doz 5 in., \$1.25 @ \$1.30; 6 in., \$1.45 @ \$1.50.	
Gas Pipe.....	7 8 10 12 in.
Acme Nippers.....	\$2.00 \$2.25 \$3.00 \$3.75
Cronk & Carrier Mfg. Co.:.....	
American Button.....	75@100
Cronk's.....	60
Improved Button.....	60@100
Stub's Pattern.....	50
Combination and others.....	75
Heller's Farriers' Nippers, Pincers and Tools.....	40@100

P. S. & W. Timmers' Cutting Nip-
pers.....30@30.10
Swedish Side, End and Diagonal Cut-
ting Pliers.....50
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40

Plumbs and Levels—

Chapin-Stephens Co.:.....	
Plumbs and Levels.....	30@30.10
Chapin's Imp. Brass Cor.....	40@40.10
Pocket Levels.....	30@30.10
Diston's Plumbs and Levels.....	70
Diston's Pocket Levels.....	70
C. E. Jennings & Co.'s Iron.....	35
C. E. Jennings & Co.'s Iron, Adjust- able.....	40@40.10
Stanley R. & L. Co.....	45
Stanley's Duplex.....	35
Woods' Extension.....	35

Poachers, Egg—

Buffalo Steam Egg Poachers.....	doz. \$2.00
No. 1, \$6.00; No. 2, \$9.00; No. 3, \$20.00; No. 4, \$12.00.....	50

Points, Glaziers—

Bulk and 1-lb. papers, lb. 8 1/2 @ 9 1/2	
1/4-lb. papers.....	10.9 @ 10 1/2
1/4-lb. papers.....	10.9 @ 10 1/2

Pokes, Animal—

Ft. Madison Hawkeye.....	doz. \$3.25
Ft. Madison Western.....	doz. \$4.50

Police Goods—

Manufacturers' Lists.....	25@25.45
Towers.....	25

Polish—Metal—

Prestolite Liquid, No. 1 (1/2 pt.).....	doz. \$3.00
No. 2 (1 qt.).....	\$9.75
Prestolite Paste.....	40@100
George William Hoffman.....	40
U. S. Metal Polish Paste, 3 oz. boxes.....	doz. \$5.00
1/2 lb boxes.....	doz. \$1.25
1 lb boxes.....	doz. \$2.25
U. S. Liquid, 3 oz. cans.....	doz. \$1.25
1 lb cans.....	doz. \$2.00
Barkeepers' Friend Metal Polish.....	doz. \$1.75
Wynn's White Silk.....	doz. \$1.00
Wynn's White Silk.....	doz. \$1.00

Stove—

Black Eagle Benzine Paste, 5 lb cans.....	doz. \$10.00
Black Eagle, Liquid, 1/2 pt. cans.....	doz. \$7.50

Black Jack Paste, 1/2 lb cans.....	doz. \$9.00
Black Kid Paste, 5 lb cans.....	each \$0.65
Ladd's Black Beauty, 5 lb cans.....	50
Joseph Dixon.....	gr. \$5.75
Dixon's Plumbago.....	10
Firestone.....	gr. \$2.50
Gem.....	gr. \$4.50
Japanese.....	gr. \$3.50
Jet Black.....	gr. \$3.50
Peerless Iron Enamel, 10 oz. cans.....	doz. \$1.50

Wynn's:	
Black Silk, 5 lb pail.....	each 70¢
Black Silk, 1/2 lb box.....	doz. \$1.00
Black Silk, 5 oz. box.....	doz. \$0.75
Black Silk, 1/2 pt. liq.....	doz. \$1.00

Poppers, Corn—

1 qt., Square.....	gro. \$9.00
1 qt., Round.....	gro. \$10.00
1 1/2 qt., Square.....	gro. \$11.00
2 qt., Square.....	gro. \$13.00

Post Hole and Tree Au-

gers and Diggers—

See also Diggers, Post Hole, &c.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 4 1/2 in.; 6 ft., 4 1/2 in.; 6 1/2 ft., 4 1/2 in.....	each \$1.30
Steel Hitching Posts.....	each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enameled.....	40
Tinned.....	35

Powder—

In Canisters:	
Duck, 1 lb.....	each 45¢
Fine Sporting, 1 lb.....	each 75¢
Rifle, 1/2 lb.....	each 15¢
Rifle, 1 lb.....	each 25¢

In Kegs:

12 1/2-lb. kegs.....	\$2.50
25-lb. kegs.....	\$4.50
King's Semi-Smokeless:	
Keg (25 lb bulk).....	\$6.50
Half Keg (12 1/2 lb bulk).....	\$3.50
Quarter Keg (6 1/2 lb bulk).....	\$1.90
Case 24 (1 lb cans bulk).....	\$2.50
Half case (1 lb cans bulk).....	\$1.50
King's Smokeless:	
Keg (25 lb bulk).....	\$12.00
Half Keg (12 1/2 lb bulk).....	6.25
Quarter Keg (6 1/2 lb bulk).....	3.25
Case 24 (1 lb cans bulk).....	14.00
Half case 12 (1 lb c. bk.).....	7.25
Robin Hood Sm'less Shot Gun.....	\$0.25

Presses—

Enterprise Mfg. Co.....	20@25
Morrill's No. 1.....	doz. \$20.00

Pruning Hooks and Shears

See Shears.

Pullers, Cork—

Invincible Cork Puller.....	\$21.00
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Pullers, Nail—

Cyclops.....	50
Miller's Falls, No. 3.....	doz. \$12.00
Morrill's No. 1, Nail Puller.....	doz. \$20.00
Pearson No. 1, Cyclone Spike Puller, each \$30.00.....	doz. \$9.00
Pelican.....	doz. \$9.00
Seranton, Case Lots:	
No. 2B (large).....	\$5.50
No. 3 (small).....	\$5.00
Smith & Hemenway Co.:.....	
Diamond B. No. 2, case lots.....	doz. \$6.00
Diamond B. No. 3, case lots.....	doz. \$5.50
Giant No. 1.....	doz. \$18.00
No. 2.....	\$15.00
No. 3.....	\$15.00

Pulleys, Single Wheel—

Inch.....	1 1/2 1 3/4 2 3
Avening or Tackle.....	doz. \$0.30 .15 .60 1.05
Hay Fork, Steel or Solid Eye.....	doz., 4 in., \$1.25; 5 in., \$1.55

Inch.....	2 2 1/4 2 1/2
Hot House, doz.....	\$0.65 .85 1.20
Inch.....	1 1/4 1 1/2 1 3/4

Screw, doz.....	\$0.16 .19 .23 .30
Inch.....	1 1/4 1 1/2 1 3/4
Side, doz.....	\$0.25 .40 .55 .60
Inch.....	1 1/2 1 3/4 2 2 1/2

Stowell's:	
Ceiling or End, Anti-Friction.....	60@100
Dumb Waiter, Anti-Friction.....	60@100
Electric Light.....	60
Side, Anti-Friction.....	60@100

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1 1/4 and 2 in.....	16@19¢
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Auger Mortise, no Face Plate, per doz, 1 1/4 and 2 in.....	16@19¢
Acme.....	1 1/4 in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7.....	2 in.....

Grand Rapids All Steel Noiseless.....	doz. \$5.00
Ideal.....	70@100
Niagara.....	1 1/4 in., 16¢; 2 in., 19¢
No. 25, Troy.....	1 1/4 in., 14¢; 2 in., 16¢
Star.....	1 1/4 in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.	

Pumps—

Cistern.....	60@60.10
Pitcher Spout.....	80@80.50
Wood Pumps, Tubing, etc.....	45@50

Barnes Dbl. Acting (low list).....	50
Barnes' Pitcher Spout.....	75@100
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....	\$16.00

Daisy Spray Pump.....	doz. \$7.20
Flint & Walling's, Fast Mail Hand, (low list).....	55
Flint & Walling's, Fast Mail (low list).....	55

Flint & Walling's, Tight Top Pitcher.....	80
National Specialty Mfg. Co., Measur- ing.....	60.00
Mechanical Sprayer.....	30
Myers' Pumps (low list).....	37.20
Myers' Power Pumps.....	50
Myers' Spray Pumps.....	50

Pump Leathers—

Plunger and Lower Valve—Per gro.....	
Inch.....	2 2 1/2 2 3/4 2 1/2
Inch.....	\$2.20 2.50 2.75 3.00
Inch.....	3 3 1/4 3 1/2 3 3/4
Inch.....	\$3.30 3.60 3.85 4.10 4.40

Plunger Cup Leathers—Per 100:	
Inch.....	2 1/2 3 3 1/2 4
Inch.....	\$2.75 3.85 5.00 6.00

Punches—

Saddlers' or Drive, good.....	doz. \$0.75
Spring, single, abe, good qual- ity.....	\$1.75@2.00
Revolving (4 tubes).....	doz. \$3.50@3.75

Bemis & Call Co.'s Cast St'l Drive.....	50
Bemis & Call Co.'s Check.....	50
Morrill's No. 1 (A.B.C.).....	doz. \$15.50
No. 2.....	doz. \$22.50
Hercules, each.....	\$7.50
Niagara Hollow Punches.....	60
Niagara Solid Punches.....	55@100
Steel Screw, B. & K. Mfg. Co.....	50
Timmers' Hollow, P. S. & W. Co.....	35@45
Timmers' Solid, P. S. & W. Co.....	doz. \$1.40

Spring, single, abe, good qual- ity.....	\$1.75@2.00
Revolving (4 tubes).....	doz. \$3.50@3.75

Bemis & Call Co.'s Cast St'l Drive.....	50
Bemis & Call Co.'s Check.....	50
Morrill's No. 1 (A.B.C.).....	doz. \$15.50
No. 2.....	doz. \$22.50
Hercules, each.....	\$7.50
Niagara Hollow Punches.....	60
Niagara Solid Punches.....	55@100
Steel Screw, B. & K. Mfg. Co.....	50
Timmers' Hollow, P. S. & W. Co.....	35@45
Timmers' Solid, P. S. & W. Co.....	doz. \$1.40

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Sisal, Tarred, Medium Lath Yarn:	
Mixed.....lb. 7 7/8¢	
Pure.....lb. 9 3/4¢	
Cotton Rope:	
Best, 1/4-in. and larger.....16¢	
Medium, 1/4-in. and larger.....14¢	
Common, 1/4-in. and larger.....10 1/2¢	
Jute Rope:	
Thread No. 1, 1/4-in. & up, lb. 6 1/2¢	
Thread No. 2, 1/4-in. & up, lb. 5 1/2¢	
Old Colony Manila Transmission Rope.....lb 17 1/2¢	
Wire Rope—	
Galvanized.....12 1/2¢@12 3/4¢	
Plain.....50¢@2 1/2¢	
Ropes, Hammocks—	
Covert Mfg. Co.:.....50¢@55¢	
Jute.....35¢@35 1/2¢	
Covert Saddle Works.....60¢@65¢	
Rules—	
Boxwood.....60¢@10¢@10 1/2¢	
Ivory.....35¢@10¢@10 1/2¢	
Boxwood.....60¢@10¢@10 1/2¢	
Ivory.....35¢@10¢@10 1/2¢	
Miscellaneous.....50¢@55¢	
Combination.....50¢@55¢	
Stationers'.....10¢@10 1/2¢	
Keuffel & Esser Co.:	
Folding, Wood.....35¢@10¢	
Folding, Steel.....35¢@10¢	
Lufkin's Steel.....50¢@10¢	
Lufkin's Lumber.....60¢	
Stanley R. & L. Co.:.....60¢	
Boxwood.....45¢	
Ivory.....45¢	
Miscellaneous.....60¢	
Zig Zag.....40¢	
Zig Zag, Pin Joint.....42 1/2¢	
Upson Nut Co.:.....80¢@10¢@10 1/2¢	
Boxwood.....35¢@10¢@10 1/2¢	
Ivory.....35¢@10¢@10 1/2¢	
Sash Balances—	
See Balance, Sash.	
Sash Locks—	
See Locks, Sash.	
Sash Weights—	
See Weights, Sash.	
Sausage Stuffers or Fillers	
See Stuffers or Fillers, Sausage.	
Saw Frames—	
See Frames, Saw.	
Saw Sets—	
See Sets, Saw.	
Saw Tools—	
See Tools, Saw.	
Saws—	
Atkins':.....50¢	
Band.....50¢@10¢@10 1/2¢	
Cross Cuts.....35¢@5¢	
Mulay, Mill and Drag.....50¢	
One-Man Saw.....40¢	
Wood Saws.....40¢	
Wood, Compass &c.....40¢	
Chapin-Stephens Co.:.....30¢@30¢@10¢	
Turning Saws and Frames.....30¢@30¢@10¢	
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws.....30¢@10¢@5¢	
Diston's:	
Circular, Solid and Inset Tooth.....50¢	
Band, 2 to 14 in. wide.....50¢	
Band, 1/4 to 1 1/2.....60¢	
Crosscuts.....50¢	
Narrow Crosscuts.....50¢	
Mulay, Mill and Drag.....50¢	
Framed Woodsaws.....35¢	
Woodsaw Blades.....35¢	
Woodsaw Rods.....35¢	
Hand Saws, Nos. 12, 90, 9, 16, 4100, D6, 120, 76, 77, 8.....25¢	
Hand Saws, No. 7, 107, 107 1/2, 3, 1, 8, 50, Combination.....25¢	
Compass, Key Hole &c.....25¢	
Butcher Saws and Blades.....30¢	
C. E. Jennings & Co.'s:	
Back Saws.....25¢	
Butcher Saws.....30¢	
Compass and Key Hole Saws.....35¢	
Framed Wood Saws.....30¢	
Hand Saws.....25¢@2 1/2¢	
Wood Saw Blades.....30¢	
Millers Falls:	
Butcher Saws.....15¢@10¢	
Star Saw Blades.....15¢@10¢	
Peace & Richardson's Hand Saws.....30¢	
Simonds':	
Circular Saws.....50¢	
Crescent Ground Cross Cut Saws.....35¢	
One-Man Cross Cuts.....40¢@10¢	
Gang Mill, Mulay and Drag Saws.....50¢	
Band Saws.....35¢@35 1/2¢	
Back Saws.....25¢@2 1/2¢	
Butcher Saws.....35¢@35 1/2¢	
Hand Saws.....25¢@2 1/2¢	
Hand Saws, Bay State Brand.....45¢	
Compass, Key Hole, &c.....25¢@2 1/2¢	
Wood Saws.....35¢@35 1/2¢	
Springfield Mach. Screw Co.:.....50¢	
Diamond Kitchen Saws.....40¢@10¢@50¢	
Butcher Saws Blades.....35¢@40¢	
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50¢	
Hack Saws—	
Atkins' Hack Saw Blades A A A.....25¢	
Diston's:	
Concave Blades.....25¢	
Keystone.....40¢	
Hack Saw Frames.....30¢	
Fitchburg File Works, The Best.....25¢	
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180.....40¢@7 1/2¢	
Hack Saws, Nos. 175, 180, complete.....40¢@7 1/2¢	
Goodell's Hack Saw Blades.....40¢	
Griffin's Hack Saw Frames.....35¢@5¢@10¢	
Griffin's Hack Saw Blades.....35¢@5¢@10¢	
Springfield Mach. Screw Co.:.....35¢	
Diamond Hack Saw Blades.....35¢	
Diamond Hack Saw Frames.....50¢	
Star Hack Saws and Blades.....15¢@10¢	
Sterling Hack Saw Blades.....35¢	
Sterling Hack Saw Frames.....30¢@10¢@5¢	
Scroll—	
Barnes' No. 7, 15.....25¢	
Barnes' Voicopedle Power Scroll Saw, without boring attachment.....40¢	
with boring attachment.....20¢@25¢	

Lester, complete, \$10.00.....15¢@10¢	
Rogers, complete, \$4.00.....15¢@10¢	
Scalers, Fish—	
Covert's Saddle Works.....60¢@10¢	
Scales—	
Family, Turnbull's.....50¢@50¢@10¢	
Counter:	
Hatch, Platform, 1/2 oz. to 4 lbs.....doz. \$5.50	
Tico Platforms, 1/2 oz. to 8 lbs.....doz. \$16.00	
Union Platform, Plain.....\$1.70@1.90	
Union Platform, Stpd.....\$1.85@2.13	
Chatillon's:	
Eureka.....25¢	
Favorite.....40¢	
Crocker's Trip Scales.....50¢	
Chicago, Scale Co.:.....25¢	
The "Little Detective".....25 lbs 50¢	
Family or Family No. 2.....40¢	
Portable Platform (reduced list).....50¢	
Wagon or Stock (reduced list).....25¢@35¢	
"The Standard" Portables.....50¢	
"The Standard" R. R. and Wagon.....50¢	
Scrapers—	
Box, 1 Handle.....doz. \$2.00@2.25	
Box, 2 Handle.....doz. \$2.00@2.25	
Ship.....Light, \$2.00; Heavy, \$1.50	
Adjustable Box Scraper (S. R. & L. Co.), \$6.00.....45¢	
Chapin-Stephens Co., Box.....50¢@50¢@10¢	
Screens, Window and Frames—	
Air Line Pattern Screens.....60¢@10¢	
Flyer Pattern Screens.....60¢@10¢@10 1/2¢	
Maine Screen Frames.....40¢@10¢@5¢	
Perfection Screens.....60¢@10¢@10 1/2¢	
Phillips Screen Frames.....60¢@10¢@10 1/2¢	
See also Doors.	
Screws—Bench and Hand	
Bench, Iron, doz., 1 in., \$2.50@2.75; 1 1/4, \$3.00@3.25; 1 1/2, \$3.50@3.75	
Bench, W'd, Beech, doz. 30¢@30¢@5¢	
Hand, Wood.....30¢@30¢@5¢	
R. Bliss Mfg. Co., Hand.....30¢@30¢@5¢	
Chapin-Stephens Co., Hand.....30¢@30¢@5¢	
Ohio Tool Co., Bench and Hand.....30¢	
Coach, Lag and Hand Rail—	
Lag, Cone Point, list Oct. 1, '99.....75¢@17 1/2¢	
Coach, Gimlet Point, list Oct. 1, '99.....75¢@12 1/2¢	
Hand Rail, list Jan. 1, '81.....70¢@10¢@75¢	
Jack Screws—	
Standard List.....75¢@10¢@80¢@5¢	
Millers Falls.....50¢@10¢@10 1/2¢	
Millers Falls, Roller.....50¢@10¢	
P. S. & W.....50¢@50¢@5¢	
Sargent.....70¢@10¢	
Sweet Iron Works.....75¢@10¢@80¢@5¢	
Machine—	
List Jan. 1, '98:	
Flat or Round Head, Iron.....50¢@50¢@10¢	
Flat or Round Head, Brass.....50¢@50¢@10¢	
Set and Cap—	
Set (Iron).....80¢	
Set (Steel), net advance over Iron.....25¢	
Sq. Hd. Cap.....75¢	
Hex. Hd. Cap.....75¢	
Rd. or Fullister Hd. Cap.....65¢@65¢@10¢	
Wood—	
List July 23, 1903.	
Manufacturers' printed discounts:	
Flat Head, Iron.....87¢@10¢@10 1/2¢	
Round Head, Iron.....85¢@10¢@10 1/2¢	
Flat Head, Brass.....85¢@10¢@10 1/2¢	
Round Head, Brass.....85¢@10¢@10 1/2¢	
Flat Head, Bronze.....77¢@10¢@10 1/2¢	
Round Head, Bronze.....77¢@10¢@10 1/2¢	
Drive Screws.....87¢@10¢@10 1/2¢	
Scroll Saws—	
See Saws, Scroll.	
Scythes—	
Prices announced for next season:	
Clipper Pattern, Grass.....\$6.20	
Full Polished, Clipper.....\$6.75	
Grain.....\$8.00	
Clipper, Grain.....\$9.25	
Weed and Bush.....\$6.25	
Seeders, Raisin—	
Enterprise.....25¢@30¢	
Sets—Awl and Tool—	
Aiken's Sets, Awl and Tools:	
No. 20, 1/2 doz. \$10.00.....50¢@10¢@10¢	
Fray's Adj. Tool Handles, No. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7.....50¢	
C. E. Jennings & Co.'s Model Tool Holders.....30¢	
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18.....15¢@10¢	
Garden Tool Sets—	
Ft. Madison Three Plows, Hoe, Rake and Shovel.....doz sets \$9.00	
Octagon.....gro. \$3.50@3.75	
Buck Bros.....27 1/2¢	
Cannon's Diamond Point, 1/2 doz. \$12.25; Mayhew's.....doz. \$9.00	
Snell's Cannon's Diamond Point.....\$7.20	
Snell's Cor'gated, Cup Pt.....\$7.20	
Snell's Knurled, Cup Pt.....\$7.20	
Springfield Mach. Screw Co.:.....\$7.20	
Diamond Knurled Cup Pt.....\$7.20	
Rivet—	
Regular list.....75¢@75¢@10¢	
Saw—	
Aiken's:	
Genuine.....50¢@10¢	
Imitation.....50¢@10¢	
Atkins':	
Criterion.....40¢	
Adjustable.....40¢	
Bemis & Call Co.'s.....40¢	
Cross Cut.....30¢	

Plate.....20¢	
Diston's Star and Monarch.....25¢	
Morrill's No. 1, \$15.00.....50¢	
Nos. 3 and 4, Cross Cut, \$20.63.....50¢	
No. 5 Mill, \$20.00.....50¢	
No. 10, 11, 25, \$15.63.....50¢	
No. 1 Old Style, \$10.00.....50¢	
Special, \$16.25.....50¢	
Giant Royal, Cross Cut.....doz. \$8.50	
Royal, Hand.....doz. \$5.00	
Talntor Positive.....doz. \$6.75	
Shaving—	
Fox Shaving Sets, No. 30.....doz., net, \$28.00	
Sharpeners, Knife—	
Chicago Wheel & Mfg. Co.....65¢	
Shaves, Spoke—	
Iron.....doz. \$1.10@1.25	
Wood.....doz. \$1.75@2.25	
Bailey's (Stanley R. & L. Co.).....45¢	
Razor Edge (Stanley R. & L. Co.).....35¢	
Chapin-Stephens Co.....30¢@30¢@10¢	
Goodell's.....doz. \$9.00.....15¢@10¢	
Wood's F1 and F2.....50¢	
Shears—	
Cast Iron.....7 8 9 in.	
Best.....\$16.00 18.00 20.00 gro.	
Good.....\$13.00 15.00 17.00 gro.	
Cheap.....\$5.00 6.00 7.00 gro.	
Straight Trimmers, &c.—	
Best quality Jap.....70¢@70¢@10¢	
Best quality, Nickel.....60¢@60¢@10¢	
Fair quality, Jap.....80¢@80¢@5¢	
Fair quality, Nickel.....75¢@75¢@10¢	
Tailors' Shears—	
Acme Cast Shears.....40¢@40¢@5¢	
Heinrich's Tailors' Shears.....45¢	
Wilkinson's Hedge, 1900 list.....45¢	
Wilkinson's Branch, Lawn & Border.....40¢	
Wilkinson's Sheep, 1900 list.....50¢	
Tinners' Snips—	
Steel Blades.....20¢@20¢@10¢	
Steel Laid Blades.....40¢@10¢@30¢	
Forged Handles, Steel Blades, Berlin.....40¢@40¢@10¢	
Heinrich's Snips.....40¢	
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.....50¢	
Niagara Snips.....40¢	
P. S. & W. Co.....20¢	
Pruning Shears and Tools	
Cronk's Grape Shears.....33 1/2¢	
Cronk's Pruning Shears.....33 1/2¢	
Diston's Combined Pruning Hook and Saw.....doz. \$15.00.....25¢	
Diston's Pruning Hook.....\$12.00.....25¢	
John T. Henry Mfg. Co.:.....25¢	
Pruning Shears, all grades.....40¢@40¢@5¢	
Orange Shears.....50¢@10¢@50¢@20¢	
Grape.....40¢@10¢@50¢	
Tree Pruners.....75¢	
P. S. & W. Co.....33 1/2¢	
Sheaves—Sliding Door—	
Stowell's Anti-Friction.....50¢	
Patent Roller, Hatfield's, Sargent's list.....70¢@10¢	
Reading.....40¢	
H. & E. list.....33 1/2¢	
Wrightsville Hatfield Pattern.....60¢	
Sliding Shutter—	
Reading list.....40¢	
R. & E. list.....33 1/2¢	
Sargent's list.....50¢@10¢	
Shells—Shells, Empty—	
Brass Shells, Empty:	
First quality, all gauges.....60¢@5¢	
Climax, Club, Rival, 10 and 12 gauge.....65¢@5¢	
Paper Shells, Empty:	
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.....55¢@5¢	
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....20¢	
Climax, Union, League, New Rival, 10 and 12 gauge.....25¢	
Climax, Union, League, New Rival, 14, 16 and 20 gauge (\$7.50 list).....20¢	
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33 1/2¢@5¢	
Robin Hood, Low Brass.....20¢@10¢	
Robin Hood, High Brass.....30¢@10¢	
Shells, Loaded—	
Loaded with Black Powder.....40¢	
Loaded with Smokeless Powder, medium grade.....40¢@5¢	
Loaded with Smokeless Powder, high grade.....40¢@10¢@10¢	
Robin Hood Smokeless Powder:	
Robin Hood, Low Brass.....50¢	
Comets, High Brass.....50¢@10¢@5¢	
Shoes, Horse, Mule, &c.—	
F.o.b. Pittsburgh:	
Iron.....per keg \$4.00	
Steel.....per keg \$3.75	
Burden's, all sizes.....per keg \$3.90	
Shot—	
Drop, up to B, 25-lb. bag.....\$1.65	
Drop, B and larger.....per 25-lb. bag, \$1.90	
Buck, 25-lb. bag.....\$1.90	
Chilled, 25-lb. bag.....\$1.90	
Shovels and Spades—	
Association List, Nov. 15, 1902.....40¢	
Sieves and Sifters—	
Hunter's Imitation.....gro. \$10.50@11.00	
Hunter's Genuine.....per gro. \$12.00@12.50	
Buffalo Metallic Blued, S. S. Co., 1/2 gr.: 14¢ 16¢ 18¢ 18¢ 20¢	
13¢ 20¢ 21¢ 50¢ 14¢ 40	
Shaker (Barber's Pat.) Flour Sifters.....doz. \$2.00.....20¢	
Sieves, Seamless Metallic	
Mesh.....14 16 18 20	
Iron Wire.....\$1.05 1.05 1.10 1.20	
Tinned Wire.....\$1.15 1.15 1.20 1.30	

Sieves, Wooden Rim—	
Nested, 10, 11 and 12 Inch.....	doz. \$0.90@0.95
Mesh 20, Nested.....	doz. \$1.00@1.05
Mesh 24, Nested.....	doz. \$1.30@1.40
Sinks, Cast Iron—	
Standard list.....	60¢@60¢@10¢
NOTE—There is not entire uniformity in lists used by jobbers.	
Skins, Wagon—	
Cast Iron.....	80¢@10¢@80¢@10¢@10¢
Steel.....	40¢@40¢@10¢
Slates, School—	
Factory Shipments.....	50¢@50¢@10¢
"D" Slates.....	50¢@50¢@10¢
Eureka, Unexcelled Noiseless.....	60¢@5¢
Victor A, Noiseless.....	60¢@5¢
	60¢@5¢
	60¢@5¢
Slaw Cutters—See Cutters.	
Snaps, Harness—	
German.....	40¢@40¢@10¢
Covert Mfg. Co.:.....	30¢@5¢@2¢
Derby.....	30¢@10¢
High Grade.....	30¢@10¢
Jockey.....	45¢
Trojan.....	45¢
Yankee.....	30¢@5¢@2¢
Yankee Roller.....	30¢@5¢@2¢
Covert's Saddlery Works:.....	60¢
Crown.....	60¢
German.....	60¢
Model.....	60¢
Triumph.....	60¢
Oneida Community:.....	60¢
Solid Swivel.....	60¢
Sargent's Patent Guarded.....	60¢@10¢
Snaths—	
Scythe.....	50¢
Snips, Tinners—See Shears.	
Spoons and Forks—	
Silver Plated—	
Good Quality.....	50¢@10¢@60¢@5¢
Cheap.....	60¢@60¢@10¢
International Silver Co.:.....	
1847 Rogers Bros. and Rogers & Hamilton.....	30¢@10¢
Rogers & Bro., William Rogers.....	50¢@10¢
Eagle Brand.....	50¢@10¢
Anchor Rogers Brand.....	60¢
Wm. Rogers & Son.....	60¢@10¢
Miscellaneous—	
German Silver.....	60¢@60¢@5¢
Cattaraugus Cutlery Co.:.....	50¢
Seneca Silver.....	50¢
Tinned Iron—	
Teas.....	per gro. 45¢@50¢
Tables.....	per gro. \$0.90@1.00
Springs—Door—	
Chicago (Coil).....	40¢@10¢
Gem (Coil).....	20¢
Pullman (Coil).....	20¢
Reliance (Coil).....	40¢@10¢
Star (Coil).....	30¢
Torrey's Rod, 30 in.....	doz. \$1.10
Victor (Coil).....	50¢@10¢@10¢
Carriage, Wagon, &c.—	
1 1/4 in. and Wider:.....	Per lb.
Black.....	40¢@10¢
Half Bright.....	40¢@10¢
Bright.....	40¢@10¢
Painted Seat Springs:	
1 1/4 x 2 x 26.....	per pr. 42¢
1 1/4 x 3 x 25.....	per pr. 70¢
Sprinklers, Lawn—	
Enterprise.....	25¢@30¢
Philadelphia No. 1, 1/2 doz. \$12; No. 2, \$15; No. 3, \$21.....	30¢
Squares—	
Nickel plated.....	list Jan. 5, 1900.....
Steel and Iron.....	75¢@75¢@5¢
Rosewood Hdl. Try Square and T-Berels.....	60¢@10¢@10¢@70¢
Iron Hdl. Try Square and T-Berels.....	40¢@10¢@10¢@10¢@10¢
Diston's Try Sq. and T-Berels.....	70¢
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....	50¢
Squeezers, Lemon	
Wood, Common, gro. No. 0, \$5.25@5.50; No. 1, \$6.25@6.50.	
Wood, Porcelain Lined:.....	doz. \$1.00
Cheap.....	doz. \$1.25
Good Grade.....	doz. \$0.75@1.25
Tinned Iron.....	doz. \$0.75@1.25
Iron, Porcelain Lined.....	doz. \$1.75
Staples—	
Barbed Blind.....	lb. 60¢@6 1/2¢
Electricians', Association list.....	80¢@10¢@10¢@10¢
Fence Staples, Plain, \$2.25; Galvanized.....	\$2.25
Poultry Netting Staples.....	per lb. 34¢@3 1/2¢
Grand Crossing Tack Co.'s list.....	30¢@10¢
Steels, Butchers'—	
Dick's.....	30¢
Poster Bros.....	40¢
C. & A. Hoffmann's.....	30¢
Steelyards —	
	30¢@30¢@10¢
Stocks and Dies—	
Blacksmiths'.....	50¢@50¢@10¢
Curtis Rev'ble Ratchet Die Stock.....	25¢
Derby Screw Plates.....	25¢
Gardner Die Stocks No. 1.....	50¢
Gardner Die Stocks, larger sizes.....	50¢
Green River.....	25¢
Lightning Screw Plate.....	25¢
Little Giant.....	25¢
Reece's New Screw Plates.....	25¢
Stone—Scythe Stones—	
Chicago Wheel & Mfg. Co.:.....	\$8.00
Gem Corundum, 10 in., gro., 12 in. \$10.80.	
Norton Emery Scythe Stones:.....	
Less than gross lots.....	\$1.00
Gross or more.....	\$1.75
Lots of 10 gross.....	\$1.75

